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CHARACTER-EDUCATION AND SCIENTIFIC METHOD

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An inevitable outcome of recent progress is the necessity of approaching problems of character-education by methods of scientific scrutiny. The application of analysis and measurement to other areas of mental life has yielded results that are startling in their revelations and fertile in their suggestiveness for the evolution of techniques. At the same time the ancient demand that the schools should produce men of power and loyalty has acquired a new insistence as American society has sought through education the increasing satisfaction of its social needs. The intent of this paper is to examine briefly the possibilities created by the common incidence of these two forces upon current life. Has the scientific method any promise of helpfulness in the character problems which challenge all our educational endeavors to create a more satisfying human society? Will the intricate texture of personality yield its secrets little by little to the methods of experimental analysis and evaluation which have been so fruitful in other realms of nature so that we may plan an educational regimen with definite assurance of its character outcomes? Anticipating the evidence to be presented later let me now say that the thesis underlying this discussion is a qualified affirmative reply to these two questions. Already scientific psychology has something useful to offer; it promises more.

Character an Educational Ideal

We may well remind ourselves that American education has always been moralistic. Multitudinous are the devices which

school men have invented for training the character, and although there is generally the greatest ignorance of the psychological process by which the desired result is to be brought about, there is the profoundest faith that desirable character will somewhere be achieved. No teacher or school administrator would admit, in general, that children in his school fail to acquire desirable habits of conduct. Although our curricula are essentially concerned, both in content and in method, with matters of the intellect, our most impressive apologies for education have stressed its character-forming qualities. Daily we face the fact that many of the boys and girls who go through our schools fail to meet the character tests of life with adequate strength of personality. They prove deficient in industry, in honesty, in courage, in self-control, in patriotism, and in personal integrity. Two great groups of personality failures continuously confront us, those individuals who yield to delinquency and crime and those who succumb to certain forms of mental disease. At any given time there are in American jails and prisons about one hundred and forty thousand men and women of all ages. The annual admissions to all such custodial institutions are about three hundred and sixty thousand of whom more than twenty thousand are juvenile delinquents. These figures indicate the number of boys and girls who presumably go through our schools and who must be temporarily or permanently removed from free intercourse in society because of character defects so severe as to require legal restraint.

A special census of hospitals for mental disease taken by the Federal Census Bureau as of January 1, 1923, shows that during the preceding calendar year from January 1, to December 31, 1922, the 521 institutions reporting received 73,063 new patients. Of this large group more than forty thousand were diagnosed as suffering from mental ailments that psychiatrists regard as practically preventable. Almost one-sixth of the total new admissions fell in the maniac-depressive group, where at least 50 percent of all cases constitute unnecessary breakdowns. Even among those

who had been admitted to the hospital the census showed that 35.4 percent were so far recovered during the period of residence as to be discharged as cured, and an additional 31.4 percent as improved, thanks largely to the simplification of life provided by hospital residence. From the figures just cited for crime and mental disease it is apparent that American life, as we live it, yearly exacts a toll in broken character exceeding a hundred thousand individuals.

These data must be understood as representing the extreme forms of social maladjustment. If we assume that human liability to such character breakdowns under environmental pressures follows the law of normal distribution which has been demonstrated for a large body of human traits including intelligence, then we may suspect a borderland between the area of normal, efficient, happy adjustment of life and the territory of complete disaster, loosely indexed as crime and insanity. This borderland is smaller than the former, but distinctly greater than the latter. The individuals inhabiting it are those persons in whom the battle for personal integrity is not completely lost though never wholly won. Here dwell many times a hundred thousand boys and girls, men and women, individuals to whom temptation is an ever-present demon and in whom fear, desire, and despair rage unquenched. These are the individuals who fight incessantly for life against powers which, if not unseen, are at least little understood, and who, when their supporting forces weaken, add one more to the increasing throng who have yielded to the inevitable final cataclysm and collapse.

With the progress of the scientific study of human failure it becomes apparent that a portion of it, probably a large portion, is unnecessary and preventable, did society but know enough and care enough to save itself this human waste. Realization of this fact lays a heavy challenge upon education, since the individuals who compose this year's hundred thousand were but a little while ago the pupils in our schools. Glancing forward to the hundreds of thousands heading toward disaster ten years hence, it is obvious that could we but locate them now, we should find them

among pupils along with other hundreds of thousands, whose doomsday is but eleven or twelve or twenty years in the future. If science has any insight into personality, it will clearly find a field for service.

What Is the Scientific Method

In considering what the scientific method may contribute to our understanding and control of human character we should proceed from a clear understanding of what this way of thinking involves. We may think of it as involving certain steps and procedures which for the present purpose may be stated somewhat as follows. Scientific method implies: (1) the careful observation of human behavior under conditions that are constant, known, and describable; (2) the experimental analysis of such behavior into units sufficiently fine that it may be possible to relate a particular item of conduct to some antecedent condition in the individual or his environment which may fairly be regarded as its cause; (3) the recording of such behavior, its antecedent and concomitant conditions, that it may be clearly understood and subject to repetition by other observers at other times and places; (4) the generalization of the observed relations between behavior and its causes to the degree that future behavior, both immediate and remote, may be predicted for a particular individual; (5) the determination of methods of controlling situations within and without the individual so that desirable forms of behavior may be produced for the welfare of the individual and of the social group of which he is a part.

Reviewing the several types of researches relating to personality it will be neither possible nor desirable to apply to each the various criteria of the scientific method. Scarcely one, or even all combined, would satisfy a rigid evaluation in such terms. Although it is necessary to recognize the exploratory character of practically all the work that has been done, it will be apparent that workers are pioneering a way into the unknown territory of character analysis. The partial character of their methods and

the tentative nature of their findings must be accepted as the first fruits of a genuine endeavor to bring this vague domain within the field of science.

Obviously the interests of science demand something more than promising plans for character education which are put into effect in the schools without any attempt to check results. However clever a program may appear or however satisfying it may be to its authors, such devices clearly fall short of the domain of science. At the best they are hardly more than interesting hypotheses upon which a scientific study might be based. Important as they may be for immediate purposes they do not concern us here. We should, however, examine as typical certain approaches to the problem in which workers have been sensitive to the requirements of factual knowledge, although it is impossible to consider in this paper all the contributions which science has made and can make to our understanding of character.

The Psychologist Discovers Attitudes

Let us note the recognition which psychologists have given to the influence of "attitude" or "mental set" upon behavior. The ancient recognition of this phenomenon by observers of mankind could be attested by copious citations from the literature of politics and religion, as well as that of psychology and morals. The pervasiveness with which it influences conduct is intuitively admitted by wise parents, skillful politicians, and leaders of men generally.

Like many other obvious factors in human nature, it for a long time escaped experimental investigation, even though it has been recognized in psychological writing from the days of William James. Thorndike makes the influence of the "mental set" one of his five subsidiary principles of animal and human learning, citing a variety of illustrative facts to exemplify the principle. Were a survey of the experimental literature possible, it might conveniently begin with Ach and the "Wurzburg school" who noted the definite alteration of results produced by a change in the "task" set for the experimental subject. With

similar import Book noted that the set of mind has a determinable influence upon the rate at which an individual learns typewriting. Ruger found an attitude of confidence a great aid in the solving of puzzles, and Swift notes that a feeling of discouragement retards learning. Bronner calls attention to the fact that recalcitrancy, indifference, anger, depression, and the like may produce a marked difference in the score which an individual makes in a mental test designed to measure his intelligence.

Fernberger shows in a psycho-physical experiment that by altering the instructions given to a subject he could alter the capacity of that subject to make judgments in the discrimination of lifted weights. Boring, examining experimental studies, states that in order properly to interpret results it is necessary that "the total *Aufgabe* under which the subject judges must be definite in instructions and must be more fully determined by means of repeated characterizations by the subject of his attitude and procedure." Baird in a discussion of the effect of "intent" upon mental function writes:

> That the phenomenon is volitional in its essential character cannot be doubted; indeed, there seems every reason to identify the intent with a phase of the volitional process, and hence to believe that coherent thinking is at bottom quite as much volitional as it is intellectual.

The simplification and refinements of laboratory experiment may seem remote from the problems presented by the concrete complexity of individual children. It is doubtless true, however, that the "*Aufgabe*" of the laboratory is akin in quality to the "mental sets" confronting a teacher in the classroom, and that an adequate understanding of the mechanism of the simpler phenomena would do much to illuminate the more concrete problems with which teachers must deal. A more direct attack upon the complex phenomena may, however, yield more immediately useful results. Such attempts have been made by Pressey, Gates, and others. Pressey attempted to show by the method of rating and by correlation with school marks that certain character traits which he denominates "school attitudes" are almost as important as a child's purely intellectual capacities in conditioning his suc-

cess in school. Gates, using a similar but more elaborate technique, concluded that although the method failed to reveal so clearly the effect of attitude on school work "these facts do not minimize the importance of school attitudes."

The work of May should be mentioned in evaluating the part which industry, as measured by hours spent in study, plays in the success of a college student. He found that intelligence alone showed a correlation with college marks of 0.60; industry alone a coefficient of 0.32, but when intelligence and industry were combined the coefficient became 0.80.

If we should turn from the attempts at controlled experiment to the clinical field we would find abundant recognition of the rôle of attitude and mental set in the literature of psychiatry and mental hygiene, a literature which is rich in suggestion for experimental work.

While analysis of mental attitudes remains incomplete from the standpoint of science and while experimental technique is still inadequate, the progressive refinement in definition of the something-more-than-intellect in the human mind is in itself a distinct gain. Probably nothing has cleared the deck for action upon the complex phenomenon we call personality so much as has the advance of recent years in understanding the intellect. The effort of psychologists to measure intelligence by objective methods has, by its very success, thrown into relief the limitations of the intellect itself. The conspicuous failure of investigators to find in the most dependable of intelligence measurements a perfect index of school achievement is the outstanding example. The imperfect relationship between these two functions which have been the invariable result of correlation methods has required students to look elsewhere than in mere intellect for an explanation of school success. At the same time it has become possible to evaluate the part which intellect plays in any given situation, to hold it steady, to keep its influence constant while we examine the other human traits that supplement its power. Because we are able to understand and describe the nature and amount of the intellect of a so-called twelve-year-old we can now

examine and possibly evaluate the strength of supplemental traits which enable him to act like a normal thirteen-year-old or detect the weakness which may allow him to fall to the level of a ten-year-old. The definiteness of the intelligence measures thus eliminates a large amount of vagueness from the region of character analysis.

The Testing Attack on Personality

The success attending intelligence measurement has gone beyond the negative definition of a field lying without its domain. It has suggested the extension of the measuring techniques into the field of the personality itself. Downey, whose Will Temperament Tests may be mentioned not so much for their intrinsic worth as character-measuring devices as for the stimulation which they gave to related investigation, is a pioneer in the field. Largely through the use of handwriting devices she has sought to measure the "speed and fluidity of reaction," its "forcefulness and decisiveness," and its "care and persistence." Although these particular tests fail to achieve sufficient reliability to justify widespread confidence, they have stimulated investigation, led to adaptations and to the development of new methods of measurement.

More significant is the work of Voelker in devising tests of trustworthiness, Moore and Gilliland in the measurement of aggressiveness, Cady in developing tests of trustworthiness, honesty, and moral judgment, Woodworth in constructing a questionnaire test for emotional instability, Laslett in devising association tests by which to distinguish delinquents from non-delinquents, Wyman in the use of similar tests to measure social and activity interests, and Raubenheimer in preparing a group of tests for measuring moral instability. All of these efforts require an objective performance on the part of the subject in a more or less definitely controlled situation. The subject does something and in doing it indirectly reveals qualities of personality which are significant in the important issues of life. Investigators in these matters have secured tests with coefficients

of self-correlation ranging from 0.75 to 0.95, and correlations with other accepted criteria of the traits in question ranging from coefficients of 0.40 to 0.74. This indicates that the measurement of some character traits has reached a state of reliability and validity fairly comparable with the measurements of intelligence of a few years ago and equal, or superior to, many of the devices now used for measuring scholastic achievement.

These attempts at personality measurement are oriented primarily toward the extremes of conduct. They seek to differentiate those qualities of character which precede or accompany delinquency; at the other extreme they aim to identify those mental mechanisms necessary to the achievement of desirable behavior and to lay bare the processes by which worthy ideals may be made effective. The success already attending these measurement efforts is warrant for expecting most important revelations through similar methods. When we understand the elements and processes of personality, we may be able to control the essential conditions of life which will make desirable character possible.

Improving Judgments of Personality

While there has been some progress in the development of exact objective measures of character traits, there have also been encouraging attempts to improve the common-sense judgments of character which all of us make and to render such judgments valid, reliable, objective, and "scorable" in mathematical terms. The development of techniques for the identification and the rating of character traits that determine success or efficiency has a long and varied history. Galton in his studies of human nature, Cattell in determining the order of merit among American men of science, Terman in his attempts to validate intelligence tests, Scott in his efforts to evaluate the essential qualities of industrial workers and to improve the technique of selecting officers in the United States Army, Charters in his search for the elements of success in secretaries, salesmen, and other commercial workers, Courtis in preparing a scale of merit in teachers—all

have sought to perfect the judgment of human traits and to protect it from the errancies which so easily beset it.

The liability of the judgment to error in the estimation of personal qualities has been extensively exploited. Despite its inadequacies no adequate substitute has been devised, although in the matter of general intelligence the tests have effectively replaced judgment as an instrument of accurate information. The natural convenience of judgment and its modicum of reliability will, however, incline students to use it as a measure of information in all fields where more reliable measures are still wanting. Fortunately certain techniques are developing that tend to eliminate the common errors of judgment and to compensate for those which cannot be eliminated. Reference may be made to two such lines of improvement.

The first concerns the better identification and definition of traits to be rated. Reference, for illustration, may be made to the work of Charters who defines six problems that emerge in the attempt to identify the traits that can usefully be rated. These concern the initial "collection" of personality data that are pertinent to a particular vocation, the "definition" of such traits into explicit modes of behavior, the "translation" of such behavior items into "standard terms," the "condensation" of the list of terms so translated into the smallest dependable limits, the "evaluation" of the several items in terms of the statistically treated judgments of qualified experts in the field, and finally their use in actual work.

The second line of improvement has related to the means of rendering the judgment more exactly a measure of the trait rated. Probably the most significant advance has been the introduction of the graphic method, suggested by Ruml and described by Paterson. The method involves the use of a horizontal line across the page. Along the line points are designated which divide it into three, five, seven, or more equal segments. At these points are written or printed words or phrases descriptive of the trait in question. The arrangement is such that the low extreme of quality or the least amount of the trait is indicated at one

end of the line; at the other end is represented the opposite extreme of the trait. The line thus assumes the nature of a scale along which the trait distributes itself in amount or desirability or effectiveness. The method lends itself to statistical treatment for reliability and validity and to the computation of the score in mathematical terms. From the studies of rating techniques, two facts of great scientific and practical value emerge, namely, that some persons have more than ordinary capacity to make reliable and valid judgments of character and that it is possible to train other individuals to improve the judgments which they make.

The Record of Behavior

Students more and more are making written records of the observed facts of behavior, elemental and complex, because they realize that an understanding of the personality is seriously hampered by the absence of facts. The practice is growing more common of substituting for adjectival descriptions of states of mind or character an exact statement of what an individual does under circumstances that are rendered as objective as language and mathematics can make them. Reference should here be made to the work of Watson in his experimental study of instinct and emotion, to that of Richards in the adaptive difficulties of school children, that of Woolley in personality studies of young children, that of Mateer in the investigation of unstable personality in children, and to the accumulating records concerning problem children in the files of the Child-Guidance Clinics under the Joint Committee on Methods of Preventing Delinquency.

The attempt of Andrus with the aid of twenty-five students to give an inventory of the habits of nursery-school children and similar studies by Rogers and by Taylor covering other ages are at once a frank recognition of our defective information in these matters and an effort to repair the lack. Such studies leave much to be desired in the way of accuracy, of completeness, and of the differential significance of recorded data, but they are valuable in fixing attention upon overt behavior as a first step in understanding the character of a child.

Identification of Interests

The fact has long been recognized that objects of interest determine conduct and that there are great differences among individuals in this respect. Some children show early in life definite leanings toward music or games or mechanical appliances or books. The marked cases are easily observed, but we have had slight technique for the exact determination of fundamental preferences which are often too deeply hidden for even the individual himself to recognize. He does not see himself as different from others, and teachers have vague standards with which to compare him.

A greater effort has been made to understand the interests of children in reading materials than in any other field. Yet recently "interest blanks" have become common in personal studies having to do with training and educational matters, and Terman and his colleagues have demonstrated new possibilities in the range and the statistical treatment of these data. The importance of such studies should not be minimized. The most important causal factor in the conduct of any man or child is what he wants. What one knows of information or values is subordinate to the drive toward the object of fundamental interest. If we could once determine what these interests are we would have the master key to conduct.

Genetic Character of Personality

Quite as important as any special technique for evaluating human traits is the hypothesis of the genetic character of personality. Just now this concept gives evidence of new fruitfulness in the field of character education. A natural extension of the fertile hypothesis of evolution, "the genetic ideas of the soul," was claimed by Hall two decades ago to be "new in both matter and method." Even now we have hardly conceived our educational program in terms of a genetic psychology, partly no doubt because such a psychology has been provided only in its grosser outlines. Recent studies, however, have revitalized the genetic concept and revived our interest in mental growth. The develop-

ment of intelligence examinations by which it is now possible to state intellectual qualities in genetic terms that are quantitative and mathematical has given more tangible bases for arranging educational procedures in developmental terms.

Direct attacks are also made by improved methods of observation upon the genesis of emotive qualities. Renewed efforts to list the reactions of new-born infants and to study the early conditioning of infant responses, as well as the behaviorist's challenge to the older theories of instinct and emotion, have not merely freshened our interest in the developmental aspects of character, but they have revived the hope that producing desirable character may not be so forlorn a task as the prevailing theories of heredity indicate.

This view is strongly supported by recent advances in psychiatry and the field of mental health. As clinical studies proceed, it becomes more apparent that character eruptions, whether in the field of mental disease or in the field of crime and delinquency, are not sudden events. The cataclysmic happening that compels our attention is but the final result of a genetic process initiated in early, possibly infant years. Hall long ago declared his psycho-logic faith that "Youth is the golden age of life," and confirmation is given to this view in increasing measure by those who study the maladjustments of boys and girls.

Though Hall's statement may be true as an indication of certain issues of life, it is more correct to believe with the mental hygienists that the golden age for the setting of the character is childhood and infancy. The further investigation proceeds, the nearer to the natal hour is carried the initial bending of the twig which inclines the full-grown tree. So powerfully do the studies in mental pathology suggest the crucial character of these earliest years for character-education, that we have not merely a recrudescence of faith in the kindergarten, but a wave of interest in both the scientific and practical usefulness of nursery schools and a new vision of the obligations of all persons whose actions affect very young children. Everywhere those interested in

mental hygiene for the adult are striving to see that "faulty structures and discordant colors" are not during tender years woven into the "fabric of character." Macfie Campbell has said:

> The child capricious in diet, insistent on his own sleep conditions, obstinate in refusal of regular toilet habits, gaining his own ends by the display of unpleasant tantrums, will have difficulty in adult life in adapting himself to the demands of a real world, which is not prone to bow before tantrums, which exacts inexorably the price for neglect of simple hygienic habits.

The mental hygienist teaches that these early years are the period for making sound adult character.

Recognition of Multiple Causation

From these studies of personality one necessary hypothesis has emerged for any adequate program of character education or for the intelligent analysis of the complex factors of personality, namely, the principle of multiple causation. Mayo, in analyzing the symptoms which indubitably located a social or school problem, found that he must secure at least three negative counts before being certain of identifying a problem case. Miss Dealey in a case study of thirty-eight problem children was unable to find any single causative factor operative in producing the undesirable behavior in any large group of cases, nor in fact, any element that could not be found in many cases of perfectly acceptable children. What she did find was always a concomitancy of several situation elements, the very juxtaposition of which seemed the only rational explanation of the undesirable behavior in the individual.

Low intelligence does not explain misconduct, for there are more morons of acceptable life habits than there are moron delinquents; obversely there are many intelligent criminals. Broken homes do not explain child delinquency for there are many divorced parents whose children are models of social conformity, and there are many delinquent children whose parents live in felicity. Poverty will not explain the crime and mental breakdown of children, for out of the direst poverty have at times come the most virile characters while law violators are found at

every level of wealth. But let poverty and marital misfortune in the parents and a meager intellect find their common incidence in the life of little Johnny Smith, and the possibilities of character breakdown in him are multiplied a thousand-fold. Such facts justify the expensive case-study method now commonly used in social work. It seems a necessary instrument in the understanding of human character, with its drives and its adjustments.

The Cooperative Program

The implication of the foregoing considerations seems plain to the writer. The nature of personality and the matter of character-education are not to be left to fond hoping and empirical blundering any more than is the field of the education of the intellect itself. Granted that study in this field has thus far succeeded only to the extent of teasing out a few fibers from the complex tissue of character, still these frail tendrils of fact are of the deepest significance. They mean that the methods of science—slowly yet surely—are beating back the outposts of ignorance and superstition that thwart our need of understanding the fundamental desires or drives that make men act as they do. The substantial progress which these studies have already made gives us criteria for a re-evaluation and improvement of educational practice. They furnish some information upon which we can project the control of behavior and the prediction of ultimate character development. More important than these immediate values they initiate the methods for fundamental research in the matter of character education.

Of greater import than any of the detailed techniques of research is the realization that effective investigation in the field of the personality must be a cooperative effort. In a genuine sense character is the behavior of a whole organism acting as a unit. In some respects this wholeness includes the stimulating environment as well as the living protoplasm encased within a single human body. The sciences which may contribute to our understanding of character are thus widely inclusive. No sci-

entist in the world today sufficiently represents in his own person all the pertinent knowledges and methods necessary. Medicine is in some respects the most richly endowed discipline for the task, but its limitations are obvious and glaring. Psychology is fertile in orientation and technique, but the psychologist is but partially equipped. The same may be said of the sociologist and the educator. But while none of these is completely fitted to the task, by the cooperation of all we can go far in the satisfactory understanding of character and its control. Terman's studies of gifted children are an interesting illustration of personality research in which the way was led by the psychologist. The child-guidance clinics of the Joint Committee of Delinquency is another equally interesting research with the physician as the guide. In the long run it is relatively unimportant which profession assumes the immediate leadership. It is far more important to recognize the need for a comprehensive and cooperative attack upon the problem.

It is difficult to end this discussion without a word concerning the social significance of research in the field of personality. The most significant contribution which psychology has made to social welfare is the recently developed knowledge about the intellect, its nature and mode of operation, and the method of its control. At least of equal importance would be a corresponding knowledge about character, its elements, and its processes of formation. Intelligence and character are permanently the world's greatest assets. No community wealth imaginable would rival in merit a thorough scientific understanding of human nature from the angle of these two concepts. A million dollars a year if it were devoted for fifty years to research in matters of intellect and personality would yield a wealth so incalculably greater than is likely to come from one of the $50,000,000 battleships which we build so facilely and destroy so casually that the comparison seems childlike. It is hoped that society will somehow find the way to devote a larger portion of its resources to these important matters.

SENIOR HIGH-SCHOOL ENGLISH AS REVEALED BY A STANDARD TEST

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As a major subject in the school curriculum English has always held a prominent place even though the entrance of new subjects, one after another, has necessitated the frequent readjustment of the amount of time which can be given to it. In the elementary grades the combined time given to reading, spelling, and language is more than one-third of the total time children spend in school during this period. A comparison of the time-allotment studies of Holmes made in 1914 with those of Ayer made in 1923 shows that 47.5 percent of the total recitation period a decade ago was devoted to English and that 34.5 percent of the period is given to the subject at the present. This is a heavy reduction, but other subjects have lost even more heavily. Few high schools offer less than four years of English, and many require that amount for graduation. A large proportion of the students entering our colleges present four units of English even though but three may be required.

A subject which has held its place so long and so continuously in the schoolroom would naturally be expected to have well-defined aims and goals. The period of crude experimentation, in which the teacher seeks to discover the contribution which the subject can and should make to the education of an individual, should now be passed. One might expect the materials and methods of instruction to be well known and effectively used. However, when one looks for these characteristics, one is not altogether satisfied with the findings. The statement of aims and goals is usually vague or in such general terms as to be largely worthless for classroom use; the materials are diverse and poorly correlated, and the method is uncertain.

English instructors are likely to be found in two opposing groups in respect to the above assertions: one group denies the truth of the statements, and the other admits their truth but

offers good reasons for the conditions. The latter says that English is being adjusted to a changing social order and that therefore its aims and goals are not static, that its content is growing by leaps and bounds, and that the live teacher is constantly selecting from the new and discarding from the old in order to serve best the aims of English instruction, that method is at most but an instrument to be used in the attainment of a goal and hence must vary with instructor and class. The argument sounds logical, but its validity must be found in the results.

The statement that the world moves admits of no denial; hence, the social order into which the children of today are to step will be different from that of any preceding generation. But our faith in education tells us that it will not be so much different that the schools may not prepare in part at least for this new order. If English merits the time devoted to it, it must have a large contribution to make in the education of our children, and, if it has a large contribution to make, its aims should be well defined, its objectives specific. Unless this be true, there is little reason to expect either teachers or pupils to see clearly the purpose in the instruction given. Without such understanding, ineffective instruction is almost inevitable.

In respect to language, the aim has frequently been set forth as the development of the ability to think clearly, speak concisely, and write accurately. One author says, "The main object of this book is to develop skill in correct and clear expression of ideas." Another says, "The purpose is to teach the child to express in correct, beautiful, and effective form the fruits of his own experience, imagination, and thought." Another expresses it briefly, "to fix correct English usage," and still another, "to fix the habit of correct and effective use of English." While one may recognize such thinking, speaking, and writing when it comes to his attention, yet most teachers are helpless in reaching these ends unless more definite, more specific elements are analyzed from this complex. Concise and accurate speaking and writing involve some wealth of vocabulary, an acquaintance with correct language forms, and some knowledge of sentence

structure. Whether these are the most important objectives to be attained by English instruction may be open to debate; but few, if any, would contend that they are not of major importance.

For some years the educational leaders in Ohio have felt that many of those entering the teacher-training institutions are either poorly prepared in the elementary and secondary schools, or that the native endowment of these prospective teachers is of low grade. Hence the State Department of Education fostered a bill three years ago which provided for an entrance examination embodying both general-ability tests and tests on academic subjects. As a matter of administrative convenience the tests are given to high-school Seniors and such others as may care to present themselves some time before the end of the school year. One of the tests selected by the committee for use in the examination of May, 1925, was the English Minimum Essentials Test by J. C. Tressler. This test consists of seven parts as follows: Grammatical Correctness, Vocabulary, Punctuation and Capitalization, The Sentence and Its Parts, Sentence Sense, Inflection and Accent, and Spelling.

This report is based on the papers of 310 persons who took this examination. They were about equally distributed among the 17 counties of central Ohio and represented all types of high schools from the little village school of less than one hundred students to the high schools of Columbus with their large enrollments. Sixty-five boys and 245 girls, ranging in age from sixteen to twenty-eight years took these tests. The modal age was seventeen, and the median just past eighteen, with these two ages comprising 73 percent of the cases. Two hundred ninety-nine were just completing their high-school courses, two were juniors, and nine had been graduated from high school at some previous time. Two hundred and nineteen were from village schools, that is, places with a population of less than five thousand, while ninety-one were from places of larger size. The papers failed to show any significant differences between students from cities and those from smaller places.

The first test consists of twenty sentences. At one place in each sentence alternative words or phrases are entered in parentheses. One form is correct, the other, incorrect. The test reveals the ability of the child to recognize the correct form when it is presented with an incorrect form in the same sentence. For example, the sentence "She looks (beautiful, beautifully) in a white dress," was missed by 13 percent of the group; "They told me that Johnson (had been, was) dead for fifteen years," was missed by 7 percent; "Neither of the sentences (are, is) forceful," was missed by 59 percent. These illustrate the type of test and present also the sentence showing least error and the one showing most error. Six of the twenty sentences showed more than 50 percent of error; these were: "Neither of the sentences (are, is) forceful," "I like (that, those) kind of apples," "Jamison cared for the orphan as if he (was, were) the boy's father," "Give it to (whoever, whomever) comes to the door," "He has two to boss him now, his sister and (I, me)," and "Neither Charles nor his brother ate (his, their) breakfast this morning." Nine others were missed by from 25 to 50 percent of these students. The median score was 6 points, which means that thirteen were right and seven were wrong.

An analysis of the test shows that the errors are due to the pupils' failure to consider the number of verb and subject, to confusion of tense, to difficulty with inflected pronouns. Whether the grammatical reasons for the correct usage should be known or not may be open to debate, but many of us think that high-school Seniors who expect to become teachers should have acquired a sufficient knowledge of correct usage to enable them to pick right from wrong forms when both are presented, side by side. Even those who know correct usage may make an error in speech when thoughts are crowding for utterance, but the conditions of this test emphasize careful discrimination on the basis of all the knowledge possessed.

The second test is concerned with range of vocabulary. In each of fifteen sentences there is one key word, which is underscored. Beneath each sentence are found five other words or

phrases, one of which is a fair synonym, if not an exact definition, of the word underscored. The task, of course, is to select from the five the synonym for the underscored word. The first sentence of this test is: "I caught a glimpse of the azure sky." The word "azure" is underscored and, after the sentence, is listed the following group of words and phrases: "gray, dark and stormy, clear blue, bright, fiery red." This proved to be one of the easiest of all the sentences in this test, but it was missed by 17 percent of the group. Twenty-one of the 310 pupils tested thought "azure" meant "gray"; fourteen thought it meant "bright"; eleven thought it meant "fiery red"; and seven thought it meant "dark and stormy."

The easiest sentence is: "In the trees I saw a cardinal." The word "cardinal" is underscored, and the sentence is followed by the words: "redbird, bluebird, song sparrow, owl, woodpecker." Although all these birds are common in central Ohio, nineteen pupils thought a cardinal was a bluebird, eight thought it a song sparrow or a woodpecker, and two, an owl. Hence 12 percent of these students showed their ignorance of the identity of these common birds.

I may not take time to discuss all the fifteen sentences in detail. However, I shall give the list of key words, and the reader may judge for himself whether a state is justified in expecting a high-school graduate who wishes to enter a teacher-training institution to know half or more of them. The key words, beside those already given in the two illustrative sentences, are: "frankly," "frivolous," "vital," "inevitable," "perchance," "dale," "tawny," "hoar," "oblivion," "auspicious," "bland," "indigenous," "obsequious."

I have already stated that for each key word five words or phrases were given, one of which in each case was correct. It is significant that each of the four incorrect words under each sentence was designated one or more times as the synonym of the key word. Five of these sentences were missed by more than 50 percent of the group, and seven others, by a number ranging from 25 to 50 percent. The median score was 8, three

persons making perfect scores, and one missing every word but *perchance*. One wonders if even that was not a mere accident.

It is true that one may express himself clearly, concisely, and effectively on many topics without using any one of these key words. The words, however, can scarcely be considered so unusual that one who has passed through high school may not be expected to identify their synonyms among the words given in the test. One of these key words, *frankly*, is found among the five thousand most used words in our language, and five others fall easily within the second five thousand. Test 3 is on punctuation and capitalization, but I shall omit the results of this test.

Test 4 is headed "The Sentence and Its Parts." In each of two sentences the task is to designate the subject and the verb. In another sentence, three words are underscored, and the part of speech of each is required. Three other sentences are to be classified, each as simple, complex, or compound. This is definitely a test of technical grammar. Picking out subject and verb, giving the parts of speech for designated words, and classifying sentences may not be considered exceptionally difficult grammatical requirements, but they are definitely outside the field of pure language usage. One may indeed be able to speak and write well without knowing these things, but, since most textbooks present these phases of grammar, one might easily expect the high-school graduate to know them.

The median score was 5 out of a possible 10. Four missed everything, and two made perfect scores. Here again the facts of the situation can be appreciated only by an examination of the incorrect answers. For example, the first sentence is: "In one corner stood two artists discussing the pictures and statues." Two questions are asked. In reply to "What is the subject of the sentence?" 2 said "one corner"; 4, "discussing"; 8, "corner"; 3, "stood"; 5, "pictures"; 4, "statues". To "What is the verb?" 113 replied "discussing"; 5, "pictures and statues"; 1, "corner"; 1, "artists." Surely the concepts of *subject* and *verb* are hazy when such answers result. Twenty-two percent missed identifying the subject, and 39 percent, the verb.

The sentence in which the parts of speech of certain words are to be determined is: "He said *that* the energy *which* drives our locomotives and forces our steamships *through* the waves comes from the sun."

The reader may have been taught that there are but eight parts of speech, but he may doubt it after reading this list. To the question, "What part of speech is the word *that*?" the replies were as follows: "pronoun," 76; "adjective," 29; "adverb," 28; "relative pronoun," 19; "preposition," 15; "demonstrative pronoun," 9; "verb," 5; "explective," 3; "indefinite pronoun," 2; "participle," 2; "noun," 1; "infinitive," 1; "demonstrative adjective," 1; "interjection," 1; "relative conjunction," 1; "article," 1; "object of verb," 1; "past," 1. Sixty-three percent of the group gave a total of eighteen different wrong answers. Thirty percent failed to tell correctly to what part of speech *which* belongs, and 31 percent failed with the word *through*. Evidently the recognition of the function which a word plays in a sentence as indicated by the user's ability to identify the part of speech to which it belongs forms no certain part of the equipment which our children receive from their English instruction while they are in the grades and in high school.

The third part of this test, the classification of three sentences as simple, complex, or compound, admitted less variation of answer, though one girl added to the category by declaring one sentence to be *convex*. The simple sentence was incorrectly classified by 77 percent of the group; the complex, by 63 percent; and the compound, by 54 percent. These figures need no comment.

Test 5 was designed to test sentence sense. One or more apparent sentences without punctuation were read, and the number of sentences in each group indicated by 0, 1, 2, or 3. The following examples have been chosen from the test:

"1. Hoping that you receive the goods in perfect order
2. Do you know that Proserpine was goddess of the dead she never saw the sunshine"

Ten such groups of words are included in the test, and the con-

sequent perfect score is 10 points. Seventeen persons made this perfect score, three made 1 point only, and the median was 7. The easiest group was missed by 10 percent, and the hardest, by 62 percent. It is no wonder that the compositions of these children show choppy sentences, run-on sentences, and the like. Their sentence sense is so poor that when they are set at the specific task of discriminating one sentence from another or discovering that the group of words is no sentence at all, a third or more of them fail to do at least half of the work correctly.

Test 6 is headed "Inflection and Accent." It consists of ten items which require three different types of information. The first part of the exercise deals with verb forms. The first sentence was, "The dog ——— his leg." The pupils were asked to fill in the blank space with the past perfect tense active voice of *bite*. The following answers were given: "bit," 112; "has bitten," 77; "has bit," 9; "had bit," 9; "bite," 2; "has broken," 2; "was biting," 1; "had been bitting," 1; "is biting," 1; "had been bitten," 1; "bite-bit-bitten," 1; "dog's," 1; "bite the boy on," 1; "has a bite on," 1. Seventy-one percent made errors.

The second sentence was: "Tilden ——— that he is a good sportsman." The pupils were asked to fill the blank space with the present perfect active of *show*. The results are: "shows," 76; "showed," 52; "is showing," 26; "will show," 6; "has showed," 5; "was showing," 3; "thinks," 2; "sees," 2; "has been shown," 1; "has been showing," 1; "is being shown," 1; "says to me," 1. This gives 57 percent of error. The forms show conclusively that the term "present perfect active" has really no meaning for a large proportion of this group.

The third sentence was: "During the night the paper ——." The pupils were asked to fill the blank with the past passive of *tear*. Here again we have great diversity of answers. There was a total error of 35 percent. The variety was as follows: "tore," 68; "had been torn," 15; "has torn," 4; "was tore," 4; "had torn," 3; "were torn," 2; "has been torn," 2; "were tore," "is torn," "tore," "was tearing," "war torned," "have been torn," "has been tearing," "will tear," "tear-tore-torn," each 1. Evi-

dently "past passive" is also a term of uncertain import in the minds of these young people.

The second part of this test dealt with the forms of possessives. The possessive singular of *it* brought the answer "it's" 112 times, "its' " 19 times, "it" 10 times, and nine other varieties with a total percent of error of 49. The possessive plural of *turkey* was given as "turkey's," "turkeys," "turkies," "turkies' " by large numbers, while "turkie's," "turkies's," "turkeys's" received one or two votes each. The total error was 53 percent.

The possessive plural of *sheep* was "sheep" to 121 pupils, "sheeps' " to 43, "sheep' " to 18, "sheeps" to 12, "our sheep" to one, and "of sheep" to one. The total error on this word was 63 percent. The possessive plural of "editor-in-chief" was the worst of all, 86 percent of these students failing to find the correct combination of *s* and the apostrophe, though eighteen different combinations were tried. The reader may figure out the possibilities with "editor," "editors," "editor's" and "editors' " at one end of the word, and "chief," "chiefs," "chief'," "chief's," "chiefs' ", "chieve's," and "chieves' " at the other. One cannot help but wonder whether all of the 14 percent getting the right form did it by positive knowledge or by mere luck.

Again, one may raise the question as to the propriety of the test. Should one expect high-school Seniors to know these language forms well enough to be able to distinguish correct from incorrect forms when they are presented side by side in sentences? Should one expect young people who are finishing high school to know the meaning of these words well enough to select appropriate synonyms from groups of words containing synonym, antonym, and miscellaneous words? Should one expect knowledge of the relation between subject and verb, of parts of speech, and of kinds of sentences? Should these students at the end of their high-school careers be able to recognize a sentence when it is before them even though it has neither capital letter at the beginning nor period at the end to separate it from other sentences or groups of words? Should they be able to recognize that a group of words which has no finite verb is not

a sentence? Should they be able to give correct verb forms on demand or spell correctly singular and plural possessives? The answer must be sought elsewhere than in these test papers, for they prove conclusively that one-third to one-half of these students cannot do these things.

Since high-school Seniors are unable to make these discriminations, we may well seek the reason. Is it because they have never been taught? Are these things not in the textbooks or in the courses of study? If they are not, then it is no wonder that students cannot perform these tasks correctly. But if this information is to be found in the textbooks and is taught in the course, then the blame for the inability of the student lies at the doors of the schools. An examination of textbooks and courses shows that this information is taught. Our textbook makers, while giving varying emphasis to these phases of English, all find place for them in their books.

The inference would seem to be, therefore, that we have not taught these things effectively. I think it is fair to say that we have not considered them of prime importance. We are beginning to undertake to teach the correct spelling of the most needed words so that 90 percent or more of the school children will respond correctly whenever called upon to spell these words, and we are succeeding fairly well. We have placed certain skill in arithmetic and certain facts in various fields of knowledge in this category of necessary knowledge. We have said that the possession of this ability and these facts is so important that we cannot afford to let any but the most inferior of our children leave school without them. The tests mentioned earlier in the paper, so far as this group of students is concerned, show that these abilities in English have not been so regarded. Whether they should be or not is left entirely to the reader's judgment. Perhaps his students would make high and perfect scores in such tests, perhaps they would not. If teachers believe these things to be truly important, it will be worth their while to see whether satisfactory results are being secured.

HANDWRITING SURVEY TO DETERMINE GRADE STANDARDS

JOHN G. KIRK
Director, Commercial Education
Philadelphia Public Schools
(Continued from the March issue)

QUALITY OF HANDWRITING NECESSARY FOR VOCATIONS

From the employees of twenty-one large concerns two thousand specimens[3] of vocational handwriting were secured. The following form was used to secure the material:

PHILADELPHIA OFFICE OF THE SUPERINTENDENT OF SCHOOLS
BOARD OF PUBLIC EDUCATION

DIVISION OF COMMERCIAL EDUCATION
HANDWRITING SURVEY

Name of firm . . . . . .
Sex of writer . . . . . .
Occupation (classified) . . . . . .

Please write the following in your usual handwriting:
Fourscore and seven years ago our fathers brought forth upon this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal.

Each specimen was rated twenty different times on the Ayres Measuring Scale for Handwriting, Gettysburg Edition, in steps of 5 by twenty different judges. The average score of each specimen was secured, and the occupational and general averages determined and tabulated.

[3] The sources, from which the two thousand specimens of vocational handwriting were secured, were:

1. University of Pennsylvania
2. Temple University
3. Philadelphia high schools
4. Philadelphia elementary schools
5. H. K. Mulford Company
6. Bell Telephone Company
7. Atlantic Refining Company
8. Philadelphia Savings Fund Society.
9. John C. Winston Company
10. Pennsylvania Railroad System
11. William T. Mullikin Company
12. Sears, Roebuck & Company
13. Gimbel Brothers
14. Fidelity Mutual Life Insurance Company
15. Curtis Publishing Company
16. Franklin Printing Company
17. Western Union Telegraph Company.
18. O. K. Addressing Company
19. The Philadelphia United States Post-Office
20. L. Dannenbaum's Son & Company
21. American Railway Express Company

Table II shows that the list of vocations surveyed was quite extensive—fifty-two in all. These have been arranged somewhat according to junior and senior occupations. The title of the vocation is self-explanatory in nearly all cases. The messenger group includes inside messengers as well as telegraph boys. In some cases the inside messengers are known as routing aides. Both sexes are included. The hand addressers were employed by a publishing house, a large mail-order house, and a regular addressing company which did both hand and machine addressing. Group 21, machine operators, had little writing to do. The writing of Group 25, calculating machine operators, consisted largely of figure work.

The occupational distribution of the scores of vocational handwriting is shown in the later columns of Table II. The average quality for each occupation is shown in the column *17*. The total figures at the bottom of each column indicate the number of specimens receiving the quality scores given at the head of the column. The average quality of the two thousand specimens of vocational handwriting is 54.4.

From a comparison of the vocational averages given in this table it appears that the shipping clerks are the lowest group with a score 10 points below the general average. Next in order are the editorial assistants and proofreaders. The university teachers are the lowest of the teacher groups with an average of 46.2, while the high-school teachers are next with an average of 49.9. The elementary-school teachers constitute not only the highest teacher group but have the highest average of all the vocations, 68.8. The range of the scores for elementary teachers is especially noteworthy; with the exception of three, they all range from 50 to 90, furnishing three of a total of seven specimens listed at quality 90. The most common quality is 70. On the other hand, the scores for high-school teachers run the entire range with a specimen at both quality 20 and quality 90, quality 50 being the mode. University teachers furnish three specimens at quality 20 and range up to quality 85, quality 35 being the mode. High-school and university teachers combined supply

Vocation	Group	Number of Specimens	Distribution on Ayres Scale, Gettysburg Edition															Average Quality
			20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Abstract clerks	1	9					3	1	2	1	1			1				50.7
Accountants	2	27			1	1	4	6	4	2	4	2	2	1				51.8
Advertising	3	4					2			1			1					52.7
Audit clerks	4	132				7	15	18	25	13	18	15	10	8	2	1		56.2
Bank clerks	5	66			1	6	11	12	19	6	3	3	2		3			49.5
Bank tellers	6	14				3	3	3	1	1	1	2						46.8
Billing clerks	7	31					3	2	3	9	7	5	2					56.1
Bills-payable clerks	8	3							1	1				1				61.1
Bookkeepers	9	58			2		1	7	9	7	7	13	8	2	1	1		57.7
Calculating machine operators	10	21					1	2	3	4	4	3	2		2			58.7
Cashiers	11	72			2	2	4	3	9	23	14	8	3	3	1			56.1
Claims clerks	12	9					1		2		1	3	2					60.9
Compositors	13	11			1	1	2	2	2		3							47.2
Correspondents	14	19				1	2		1	5	2	4	4					58.2
Cost clerks	15	8						1	4	1		1	1					54.4
Credit clerks	16	15					1	3	1	2	4	3				1		57.4
Discrepancy clerks	17	17				2	4	1	2	2		4	2					52.1
Editorial assistants	18	4	1						2		1							45.3
Elementary teachers	19	125			1	1	1		8	8	17	20	23	18	14	11	3	68.8
File clerks	20	49				1	6	6	6	9	6	7	5	3				56.2
General clerks	21	219		1	3	4	26	24	36	34	33	27	20	7		2	2	55.6
Hand addressers	22	28			1		3	2	4	3	4	5	4	2				56.8
High-school teachers	23	156	1	2	12	17	23	19	30	17	8	12	8	1	4	1	1	49.9
Ledger clerks	24	16				1	2	2	3	4	1	3						54.8
Machine operators	25	65			1		8	10	8	7	15	6	6	2	1	1		55.3
Mail clerks	26	16				2		2	1	7	1	1	2					53.7
Mdse.-record clerks	27	39				1	4	4	6	7	4	7	4	1		1		56.2
Mechanical bookkeeping clerks	28	2						1	1									47.1
Messengers	29	35				4	2	4	5	4	6	6	3		1			55.2
Money-order and postal-savings clerks	30	5					1	2	1	1								46.6

Table II shows that the list of vocations surveyed was quite extensive—fifty-two in all. These have been arranged somewhat

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68.8. The range of the scores for elementary teachers is especially noteworthy; with the exception of three, they all range from 50 to 90, furnishing three of a total of seven specimens listed at quality 90. The most common quality is 70. On the other hand, the scores for high-school teachers run the entire range with a specimen at both quality 20 and quality 90, quality 50 being the mode. University teachers furnish three specimens at quality 20 and range up to quality 85, quality 35 being the mode. High-school and university teachers combined supply

Vocations										Average Quality
(1)										(19)
Abstract clerks										50.7
Accountants										51.8
Advertising										52.7
Audit clerks										56.2
Bank clerks										49.5
Bank tellers										46.8
Billing clerks										56.1
Bills-payable clerks										61.1
Bookkeepers										57.7
Calculating machine operators										58.7
Cashiers										56.1
Claims clerks										60.9
Compositors										47.2
Correspondents										58.2
Cost clerks										54.4
Credit clerks										57.4
Discrepancy clerks										52.1
Editorial assistants										45.3
Elementary teachers										68.8
File clerks										56.2
General clerks										55.6
Hand addressers										56.8
High-school teachers										49.9
Ledger clerks										54.8
Machine operators										55.3
Mail clerks										53.7
Mdse.-record clerks										56.2
Mechanical bookkeeping clerks										47.1
Messengers										55.2
Money-order and postal-savings clerks										46.6
	30	5			1	2	1	1		

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TABLE II. (*Continued*) DISTRIBUTION AND SCORES ON THE SPECIMENS OF VOCATIONAL HANDWRITING

Vocations	Group	Number of Specimens	Distribution on Ayres Scale, Gettysburg Edition															Average Quality
			20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Order clerks	31	18	....	....	....	1	1	5	4	3	2	1	....	1	....	....	....	51.9
Pressmen	32	29	....	....	1	4	5	3	9	2	5	....	....	....	....	....	....	49.5
Pricing clerks	33	12	....	....	1	....	2	3	1	1	1	2	1	....	....	....	....	51.2
Proofreaders	34	4	....	....	....	....	1	1	2	....	....	....	....	....	....	....	....	45.8
Prorate clerks	35	42	....	....	....	2	1	3	12	7	6	6	4	1	....	....	....	56.1
Receiving clerks	36	14	....	....	1	....	2	2	2	1	2	2	2	....	....	....	....	52.9
Registry clerks	37	7	....	....	....	1	....	3	2	....	1	....	....	....	....	....	....	47.9
Retail-sales clerks	38	58	....	....	3	5	13	8	9	14	3	3	....	....	....	....	....	47.3
Shipping clerks	39	42	....	1	3	5	11	10	5	3	3	1	....	....	....	....	....	44.4
Stamp clerks	40	6	....	....	....	....	....	1	3	1	....	....	1	....	....	....	....	53.6
Statistical clerks	41	10	....	....	....	....	1	....	1	2	2	1	1	2	....	....	....	60.8
Stenographers	42	69	....	1	2	2	2	10	9	11	17	7	4	3	1	....	....	55.3
Stock clerks	43	37	....	....	4	1	5	5	10	5	4	1	1	1	....	....	....	49.1
Subscription clerks	44	110	....	....	....	....	....	5	16	19	27	16	9	12	5	....	1	61.3
Tabulation clerks	45	7	....	....	....	....	....	1	....	....	3	2	1	....	....	....	....	62.0
Telephone operators	46	52	....	....	....	....	13	10	3	13	5	5	2	1	....	....	....	52.1
Telephone supervisors	47	16	....	....	....	....	....	1	4	2	5	....	3	....	1	....	....	59.2
Timekeepers and pay-roll clerks	48	10	....	....	....	....	1	1	2	2	1	....	2	1	....	....	....	56.7
Tracer clerks	49	16	....	....	....	1	....	....	1	4	2	4	4	....	....	....	....	61.2
Typists	50	26	....	....	....	....	2	6	3	3	5	3	3	1	....	....	....	56.0
University teachers	51	135	3	9	12	22	17	20	17	8	7	9	2	4	3	2	....	46.2
Waybill-route clerks	52	5	....	....	....	....	....	2	2	1	....	....	....	....	....	....	....	50.4
Total		2,880	5	14	52	98	210	237	316	281	265	224	154	77	39	21	7	54.4

four of the five specimens listed at 20—the other one was written by an editorial assistant—and eleven of the fourteen listed at 25. The superiority of the elementary teachers is probably due to the fact that handwriting is one of the subjects which they teach. After the elementary teachers, the highest average scores were secured by business groups. A few of these with their ratings are:

Tabulation clerks	62.0
Subscription clerks	61.3
Tracer clerks	61.2
Bill-payable clerks	61.1

The subscription clerks furnished one of the seven specimens at quality 90; elementary teachers furnish three; high-school teachers, one; and general clerks, two.

Bookkeepers write better than hand addressers who write slightly better than typists. General clerks rate .4 points under typists and .3 points above stenographers. Bookkeepers score 5.9 points higher than accountants. The more strictly commercial groups with few exceptions score higher and range more toward the upper end of the scale than shipping clerks, retail-sales clerks, printers, stock clerks, and telephone operators.

Figure 3 shows that quality 50 is the most common, with the specimens tending to decrease almost symmetrically from this point to quality 20 on the one side and quality 90 on the other. The average quality for all of the specimens is 54.4. It is evident that this would be too low a standard to set when we consider that more than half of the specimens were rated at 55 and above.

Furthermore, an average standard, as previously stated, would mean that many pupils would be writing far below the vocational demand. A further inspection of the figure will show that quality 70 embraces the highest large group and that almost 15 percent of the specimens were rated at this quality and above.

Furthermore, we were repeatedly informed by business men that the handwriting of many of their employees was not satisfactory, but that they were retained in spite of their poor writing because of other good qualities which they possessed, or

because it was impossible to get other qualified employees in their places who could write better. It appears, therefore, that one's presence in a vocation is not an absolute proof that one's handwriting is sufficient for the particular vocation. Further light on this subject may be gained from the consideration of the answers to a questionnaire submitted to business executives.

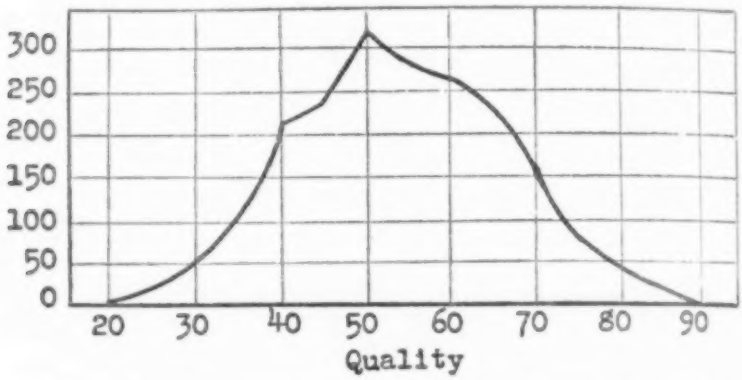

FIGURE 3. DISTRIBUTION OF THE SCORES OF TWO THOUSAND SPECIMENS OF VOCATIONAL WRITING

PHILADELPHIA OFFICE OF THE SUPERINTENDENT OF SCHOOLS
BOARD OF PUBLIC EDUCATION

QUESTIONNAIRE

Company . . . . . .
Name . . . . . .
Official position . . . . . .

1. What degree of handwriting do you demand?
   (Exhibit the Ayres Scale and note the quality which is designated.)
2. What degree of importance do you attach to good writing?
3. To what extent is handwriting used in your business?
4. Is speed in writing an important consideration?
   Should it be rapid?.....Moderate?.....Slow?.....
5. To what extent is pen and ink used for this writing?
   Pencil?

Thirty business executives answered this questionnaire. The answers to Question 1, "What degree of handwriting do you

demand?" have been tabulated and the average qualities determined as follows:

Accounting department	72
Waybilling and tracing	75
Post-office clerks	70
General clerical	65
Stock department	60
Factory	50
Retail-sales clerks	50
Hand-addressers	50
Telephone operators and supervisors	50
Shipping and receiving clerks	35
Messengers	42.5

A comparison of this summary with the scores on vocational handwriting given in Table II shows that the last three groups are the only ones whose handwriting is of the quality required by their employers. The average quality demanded of the first four groups—the more strictly commercial—is approximately 70. There seems to be a wide gap between the handwriting which the business world seeks and that which it actually gets. The handwriting used in social correspondence also falls short of social needs as illustrated by Figure 2. Plainly the duty of the schools is so to train the boys and girls that this condition may cease to exist.

A discussion of the question of the permanency of the writing habit is appropriate at this time, since it has an important bearing upon the standard to be reached in school. Psychologists claim that coordinations once established are never wholly lost. One may be somewhat out of practice as in skating, piano playing, or riding a bicycle, but this condition may be quickly remedied. Any skill once acquired seems to return with the will to do and a modicum of practice, if the individual is not physically infirm or old. Overtraining is, therefore, not necessary to safeguard the pupil against later deterioration or loss of skill.

Reasonable Standard for Vocational Purposes

After considering the judgments of business men set forth in the questionnaires, the vocational averages, and the range of

scores of the non-commercial groups shown in Table II, one may conclude that quality 60, the standard for social correspondence, is sufficient for these non-commercial groups. The questionnaires show that more than 16 percent of the strictly commercial groups write at quality 70 and above.

Such a standard seems to be reasonable and sufficiently high. Hence, it is recommended that quality 70 on the Ayres Measuring Scale for Handwriting, Gettysburg Edition, be set as the finishing standard for vocational training to be attained by our commercial students by the end of the VIII-B term. That quality 70 is not high for elementary teachers is evident from Table II which shows that their average is 68.8. Moreover, the handwriting of over 55 percent of them was of this quality and above, up to quality 90.

Other Facts Gleaned from the Questionnaires

Many interesting answers were received to Question 2, relative to the degree of importance attached to good writing. Practically all business men agreed that good writing is necessary and that poor handwriting, both of words and figures, results in a great waste of time and money. Many executives and employment managers will not consider applications for positions in which writing is required if the applicant's handwriting is poor. One manager remarked: "How can an orderly and methodical mind produce disorderly and slovenly papers?" All considered it a reflection on a firm to send out correspondence in illegible or poor handwriting. Several firms give tests to prospective employees, and, for purposes of promotion, to their employees in service. The quality and speed of handwriting are usually rated. The comment that writing must be legible and sightly appeared frequently among the replies to the questionnaire. Many of the employers commented on the illegible signatures to letters which they received. The demand for plain, compact writing and neat, legible figures was repeatedly made by railroad officials. As a result of the survey, the Pennsylvania Railroad System has standardized its figure-making in accord-

ance with the Philadelphia Standard Figures. It has sent out copies of these figures to its employees. Eventually thirty-two thousand clerks, as well as the entire auditing department, will be affected. Other important concerns are considering the standardization of figure-making. This will no doubt tend to decrease errors in copying.

In the Philadelphia Municipal Civil Service examinations for the positions of clerk and bookkeeper, penmanship has a weight of 1.5 points in a total of 10 points. The chief examiner said that if the position does not require writing, penmanship is not considered in the rating. In all other cases the applicant must write at least legibly. Penmanship is rated in the United States Civil Service examinations for the following positions: First Grade (Clerical), Second Grade, Third Grade, Bookkeeper, Shorthand and Typist, Clerk-Carrier, and Post-Office Service. It usually has a weight of 20 points in a total of 100 points. The following quotation was taken from Civil Service announcements:

> *Penmanship.*—The rating on penmanship will be determined by legibility, rapidity, neatness, and general appearance, and by correctness and uniformity in the formation of words, letters, and punctuation marks. No particular style of penmanship is preferred.

This is truly a machine age; the typewriter has superceded the pen for business correspondence. Other machines too numerous to mention are also used to save human effort. Nevertheless, the survey shows that the business and social worlds still need legible writing.

The demand for good penmanship is again emphasized in the summary of the answers to Question 3, "To what extent is handwriting used in your business?" The proportion of hand- and machine-writing varies with different types of business and in different departments of the same concern. In the case of telephone girls, retail-sales clerks, and hand-addressers, handwriting is used exclusively. For auditing waybills or using the Hollerith System, little handwriting is done except for the insertion of figures in prepared forms. In the different depart-

ments of many concerns both hand- and machine-writing are used. Summarizing the estimates of all of the executives for every department of their organizations, it is proved in Table III that the writing is divided almost equally between handwriting and machine-writing. Under the term "handwriting" the making of figures is included.

TABLE III. NUMBER OF FIRMS REPORTING THE AMOUNTS OF HANDWRITING, OF PENCIL WRITING, AND OF PEN-AND-INK WRITING DONE IN THEIR BUSINESS HOUSES

Percent	Amount of Hand-writing	Amount of Pencil Writing	Amount of Pen-and-Ink Writing
(1)	(2)	(3)	(4)
0– 4	.....	.....	1
5– 9	1	1	1
10–14	4	4	1
15–19	1	1	2
20–24	2	1	.....
25–29	2	1	2
30–34	1	.....	.....
35–39	1	.....	2
40–44	.....	.....	2
45–49	7	.....	2
50–54	3	8	8
55–59	.....	2	.....
60–64	.....	2	.....
65–69	.....	2	.....
70–74	1	.....	.....
75–79	.....	2	1
80–84	.....	.....	1
85–89	2	2	1
90–94	2	1	4
95–99	.....	1	1
100	2	1	.....
Average	47.07½	50.69	49.31

Question 4, "Is speed in writing an important consideration?" deals also with the speed necessary for writing of three rates: rapid, 100-86 letters per minute; moderate, 85-70; and slow, 69-50. The general opinion is that speed in writing is an important element to be considered. The degree of speed in writing varies, as with the auditing on timed reports, especially to foreign roads, for platform waybillers in order to ship on certain trains, in mail-order houses for filling orders, all of which are

scheduled, in printing, in the money-order department of the post-office, and at rush times in business. In a majority of cases, however, a moderate rate of speed, 85-70 is adequate, especially for accounting and general writing. Slow writing is condemned as a waste of time and money.

Answers to Question 5 show that the pencil is used more for writing purposes than one might expect and that a considerable amount of this work consists of the making of figures. Telephone girls use the pencil for all of their writing; in department stores all sales slips, delivery-department sheets, and transient, temporary records are made in pencil; in printing the indelible pencil is used for proofreaders' marks. In some divisions of the express and railroad business the pencil is used almost exclusively for auditing reports and making carbon copies. On the other hand, in such types of business as banking and insurance pen and ink are used almost entirely. The replies received from twenty-nine firms in answer to Questions 1 and 5 are grouped under percentage classes in Table III. This general summary shows that pencil was used for 51 percent and the pen for 49 percent of the recording work done by these firms. The amount of pencil writing done in business, especially in the making of figures, should suggest to the teacher the importance of careful and thorough drill on figures.

What Constitutes Good Writing

The excellence of writing must be considered from two points of view, that of the reader and that of the writer. The reader is concerned primarily with legibility or economy of reading. The writing must not be merely legible; it must be easily and quickly read. Moreover, common courtesy demands a degree of legibility so that the reader will use the minimum amount of time and energy in reading the message. Further, recent investigations show that the correlations between character estimates and exact measurement of writing are approximately zero. Contrary to popular opinion, individuality in handwriting is not incompatible with legibility and pleasing appearance, but rather

should be harmoniously associated with them. In reality the neatness, carefulness, and orderliness which the business man seeks in the handwriting of his employees are all positive traits of character, which have made possible excellence in handwriting. The writer is further concerned with the speed at which the writing can be done and with the ease and endurance of the process.

The causes of poor writing may be analyzed as poor perception, lack of motor control, and undue haste, carelessness, and

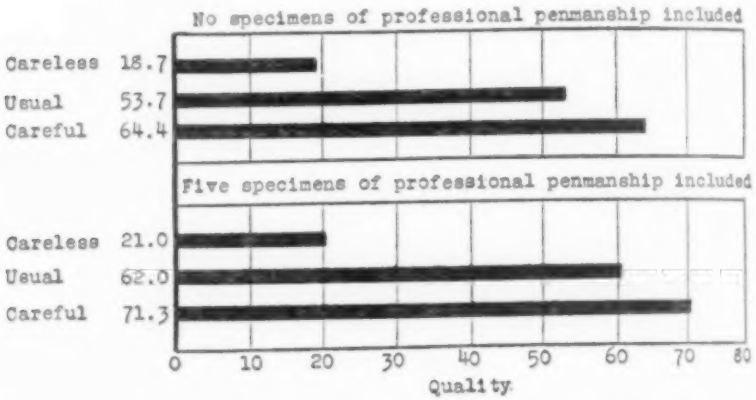

FIGURE 4. VARIATIONS OF THE QUALITY OF HANDWRITING UNDER DIFFERENT DEGREES OF CARE

indifference. Writing is also affected by one's age and physical condition, and somewhat by emotions. Undue haste, carelessness, and indifference produce a larger amount of poor writing than do poor perception and lack of motor control. Most people possess three types of handwriting, careful, usual, and careless. A study of these types was made after specimens of writing done under these three conditions had been collected. The results are shown in Figure 4.

The five specimens of professional penmanship raised the standard of each of the three types of handwriting, but affected

the usual most, indicating that penmen are as a rule more careful of their ordinary writing than others. That the degree of care exercised in writing is a factor in determining its quality is quite evident from a study of the length of the bars in this figure. Some writers had 75 points of difference between their careful and careless specimens.

A clear, readable handwriting depends, in most cases, upon the will and desire of the writer to write legibly. The poor handwriting of the world is due more to haste, carelessness, and indifference on the part of the writers than to their inability to write better.

TABLE IV. GRADE STANDARDS IN HANDWRITING

	Grades								
	I	II	III	IV	V	VI	VII	VIII	IX
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Speed (letters per minute).....	30	35	45	55	65	70	75	80	80
Quality (based on standard scales)	35	40	45	50	55	60	65	70	75

How the Philadelphia Standards Were Determined

After the finishing standards in handwriting had been determined so as to meet the needs of social correspondence and vocational uses, the problem became one of fixing standards for the different grades of the public school with the ultimate or finishing standards in mind. Specimens were selected from the various grades and scored. Since the time-allotment for handwriting is reasonable, averaging about fifteen minutes daily, and the teaching of handwriting in our schools is supervised, these specimens represented the average attainment. As a result of this study the standards given in Table IV were then established. Here are shown the *Speed* and *Quality* standards of writing for the different grades, based on the average attainment near the end of the second term.

Conclusions

The criteria which the author accepts as adequate for the determination of standards in handwriting are the demands of social and vocational activities. Standards of attainment should be both reasonable and adequate. It is desirable to set up standards which will be attainable by the majority of the pupils.

The prevailing standards of social handwriting as displayed by the one thousand specimens judged in this survey are neither reasonable nor adequate. Based upon the opinions of a number of competent judges quality 60 of the Ayres Handwriting Scale is accepted as a sufficient standard for social purposes.

The returns of a survey of the handwriting of persons employed in a variety of commercial vocations show that at least quality 70 should be reached by all who wish to engage in commercial pursuits.

To require pupils to attain standards beyond those which are reasonable and adequate is an educational waste. After determining the standards necessary for social and vocational needs the Philadelphia standards for handwriting were set up. Quality 60 of the Ayres Handwriting Scale is accepted as the goal to be reached by the end of grade VI-B. This quality of handwriting is judged sufficient for general social purposes. It is also accepted as satisfactory for teachers of all subjects, except commerce in high school and university. Quality 70 is chosen as the standard for grade VIII-B.

Various bits of information were gleaned from the results of this survey. Elementary teachers in general write better than high-school teachers; high-school teachers, in turn, better than college professors. A moderate speed of handwriting is sufficient in most cases. Haste, carelessness, and indifference cause much of the poor handwriting not only in social correspondence but in business correspondence as well. Character and excellence of handwriting are not incompatible. They should blend harmoniously.

RELATIVE AMOUNTS OF TIME REQUIRED FOR TEACHING DIFFERENT COLLEGE COURSES

F. J. KELLY
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One of the common standards among accrediting agencies for approving colleges is a maximum of fifteen hours per week of teaching by members of the staff. Partly in consequence of such a standard, it has come to be more or less common practice among colleges, particularly colleges of arts and sciences, to use fifteen hours as the common teaching assignment. This practice has but little data in its support, either with respect to the general fifteen-hour basis, or with respect to the assumption that the standard may be applied to the teachers in every college department.

That the validity of this assumption be proved or disproved is important. Some work has been done, notably that by Koos,[1] but on the whole, college practice has been little influenced to date by the results of investigations. The following brief study is reported as further evidence toward disproving the validity of the assumption of the equivalency of time requirements for teaching in the several college departments.

An attempt was made in this connection to get a composite judgment of deans of colleges with respect to the relative amounts of time required in the preparation for teaching in the several departments. No high degree of objectivity is claimed for the judgments rendered, but they are the sorts of judgments upon which all the decisions with respect to teaching load are made. They are the judgments of the officers into whose ears are poured the pleadings of the faculty members for relief from burdensome assignments. Deans are the college officers who would like to see teaching loads made equivalent wherever possible. They would, therefore, experience no inclination to report

[1] Koos, L. V. *Adjustment of the Teaching Load in a University.* Washington, D. C., Government Printing Office, 1919. 63 pp. (Bureau of Education, Bulletin No. 15)

dishonestly as would be the case with college teachers whose assignments might be increased if the inquiry revealed that such changes were just. At any rate, with all due allowance for the small numbers reporting, for subjectivity, and for guess work on the part of the deans, the resulting figures are thought to have validity enough to warrant their publication. Probably no one will appreciate their imperfections more than does the writer.

A blank form providing spaces for data and giving the following definitions and instructions was sent to all the deans of the colleges of arts, agriculture, engineering, and education of thirty-five state universities. The covering letter did not request the information, but stated that if the deans were interested in such a compilation of judgments, the writer would do the clerical work involved.

Cooperative Study of Relative Amounts of Time Required to Teach Different College Courses

Proposed by F. J. Kelly
Dean of Administration, University of Minnesota

I. *The purpose of the study.*—University and college officers are having to decide constantly the question of teaching load. In the last analysis, budget assignments go back to the question of the relative amounts of time required to teach courses in the various departments and colleges.

Certain studies of the teaching load have been made, based upon the answers given by college teachers themselves as to the amount of time they devote to all the work connected with a clock hour of teaching. An extensive study of this sort would be very valuable. However, teachers feel a sort of resentment against this type of inquiry, particularly because they realize the possibilities of the padding of answers. It is, therefore, thought desirable to try to establish the relative amounts of time required for teaching the various courses on some other basis, so as to make something of a check against the other type of inquiry, and so as to provide additional data on this important question.

II. *The plan of the proposed study.*—It is proposed in this study to combine the judgments of a considerable number of deans of schools and colleges, whose work is comparable. Deans of colleges of arts and sciences will be asked to answer with reference to departments commonly organized in those colleges; deans of engineering schools will be asked to answer for departments in engineering; and so on through the university organization.

The main factors in the time required for teaching a course (exclusive of the initial preparation) are four, and ratings will be made

by the deans on these four aspects: (1) The extent of new study and preparation required from year to year, because of the changing content of the course or of the existing knowledge in the field. (2) The extent of review, outline work, chart making, preparation of materials, etc., required for the regular meetings of the class, after the initial preparation has once been made. (3) The extent of labor involved with student manuscripts, notebooks, and the like. (4) The extent of time required for individual student conferences, outside of class time.

In order to avoid the difficulty of estimating the actual amount of time required, answers will be expected only on a relative basis, starting with a subject which is relatively constant in its materials, standardized in the methods of its teaching, and familiar to all college departments. For this basis of comparison elementary mathematics, such as college algebra and trigonometry will be used, and will be given in respect to each of the four factors above, an arbitrary value of ten. All other subjects will be rated in comparison with that value ten.

III. *Explanations.*—First, in order to avoid confusion among courses meeting different numbers of periods per week, the units of comparison will be the average time required in preparation for a single class period of recitation and lecture, or a two- or three-hour period in laboratory.

Second, in order to avoid error, due to varying sizes of classes, answers will be given in each case as for a class of twenty-five students.

Third, the time required will be understood to include the time of all helpers in the course, such as "preparators," readers of papers, and the like.

Fourth, laboratory courses will have separate answers for the lecture and recitation parts, where such exist. Laboratory parts will be understood to be compared with the common basic course, however, but the comparison will be between the preparation of a two- or three-hour laboratory period and a one-hour mathematics period.

Fifth, it is understood that wide difference among courses in a given department may exist, but in order to avoid too great complication, these will need to be grouped together and a sort of average struck. It is thought proper to divide work of a given department into its elementary courses, its intermediate courses, and advanced courses, corresponding in general, though not universally, to courses carried the first two years after high-school graduation, courses carried the third and fourth years after high-school graduation, and courses more advanced than these.

Sixth, to illustrate the method of filling out the blank (See Figure 1), suppose it is believed that intermediate courses in mathematics require 20 percent more time per period for preparation in the first factor listed than do elementary mathematics courses. Then the figure "12" should be put in the line for mathematics, in the column under *Intermediate Courses* under the *First Factor.* If advanced courses in mathematics are believed to require 50 percent more time than elementary courses in mathematics, then "15" should be put in the column under

Advanced Courses. If elementary sociology courses are thought to require 40 percent more time than elementary mathematics, then "14" should be put in the column opposite sociology, and under *Elementary Courses.* In other words, all courses, elementary, intermediate, and advanced, are to be compared with the basic elementary mathematics course. It is realized that university officials do not have exact information on which to base their answers, but the combined estimates of many officials, who are constantly having these decisions to make, will be valuable.

Seventh, deans may find that they can group several departments together. For example, foreign languages may seem to them to require approximately the same amount of time in all departments. Likewise, all the physical sciences may seem to them to be grouped together, or all the biological sciences. Wherever departments can be thus grouped, it will be perfectly appropriate to group them.

FIGURE 1. BLANK FORM FILLED IN BY THE COOPERATING DEANS

I. Please give in the spaces below, your judgments as to the relative time required to prepare for the teaching of courses in the several departments or groups of departments composing your college. Compare in each case with the time required to prepare for courses in elementary college mathematics which is arbitrarily assigned a value of ten.

DEPARTMENTS OR GROUPS OF DEPARTMENTS MAKING UP A GIVEN COLLEGE	First Factor (see III (a) above) Time Preparation Each Time Once the Course		Second Factor (see II (b) above) Daily Preparation		Third Factor (see II (c) above) Student Papers		Fourth Factor (see II (d) above) Student Conference	
	Non-Laboratory Courses and Non-Laboratory Periods of Courses Which Are in Part Non-Laboratory	Laboratory Courses and Laboratory Periods of Courses Which Are in Part Non-Laboratory	Non-Laboratory Courses and Non-Laboratory Periods of Courses Which Are in Part Non-Laboratory	Laboratory Courses and Laboratory Periods of Courses Which Are in Part Non-Laboratory	Non-Laboratory Courses and Non-Laboratory Periods of Courses Which Are in Part Non-Laboratory	Laboratory Courses and Laboratory Periods of Courses Which Are in Part Non-Laboratory	Non-Laboratory Courses and Non-Laboratory Periods of Courses Which Are in Part Non-Laboratory	Laboratory Courses and Laboratory Periods of Courses Which Are in Part Non-Laboratory
1. Mathematics	10		10		10		10	
2.								
3. (Other subjects provided)								

II. For calculating indexes for the total time requirement for teaching courses in any given department, probably the four factors stated previously do not appear of equal importance. Different weightings will be given the four factors according to the estimates furnished below.

Please give your estimate of the relative weights which should be assigned the four factors already described in equalizing teaching load from department to department. For this estimate use numbers whose sums equal 100.

Weight assigned to first factor.....
Weight assigned to second factor.....
Weight assigned to third factor.....
Weight assigned to fourth factor.....
Total.....100

Naturally, not a large proportion of deans filled out the questionnaire. It was a rather laborious task, and no obligation was

implied in the form of request for cooperation. Eleven deans of colleges of arts, nine deans of colleges of engineering, six deans of colleges of education, and five deans of colleges of agriculture sent replies, more or less complete. The number answering with respect to a given department will be found in column *3* of Table I.

From the answers thus received, averages were made of the figures indicating the time required in each department, in each of the four factors named, and in elementary, intermediate, and advanced courses, taken separately. Thus twelve averages were calculated for each department, such as botany, non-laboratory periods. Having made these averages, it was necessary next to combine the averages of the four aspects, new preparation, daily preparation, student papers, and student conferences, into a single average. For this, use was made of the relative weights of these four factors as given by the deans in answer to Question II. An average was calculated of all the weightings submitted. These average weightings were found to be as follows:

First factor	30
Second factor	28
Third factor	25
Fourth factor	17
Total	100

Each index for the table of indexes was found by multiplying the averages of the numbers submitted for a given department, by the weights indicated above, for each factor, then adding the four products and dividing by 100. For example: The average of deans' figures for botany, non-laboratory periods, elementary courses in the first factor, or new preparation, was 13.0; in the second factor, or daily preparation, it was 14.5; in the third factor, or student papers, it was 12.0; in the fourth factor, or student conferences, it was 10.0 Now

$$\frac{13.0 \times 30 + 14.5 \times 28 + 12.0 \times 25 + 10.0 \times 17}{100} = 12.66$$

thus we find the index of time required to prepare for non-laboratory courses in elementary college botany as compared with 10.0 for elementary college mathematics, which was arbitrarily used

TABLE I. INDEXES OF TIME REQUIRED IN PREPARATION FOR TEACHING COLLEGE COURSES

Departments	Type of Course	No. of Estimates Used	Elementary Courses	Intermediate Courses	Advanced Courses
(1)	(2)	(3)	(4)	(5)	(6)
Botany	Non-Laboratory	11	12.5	14.0	17.5
	Laboratory	11	15.5	17.0	20.0
Chemistry	Non-Laboratory	10	13.5	14.5	17.5
	Laboratory	10	14.0	16.0	18.0
Classical Language		10	10.0	12.0	14.5
Economics		15	14.0	15.5	19.0
English		13	15.0	17.0	19.0
Geology	Non-Laboratory	7	12.5	15.5	19.0
	Laboratory	6	14.0	17.0	19.0
German		6	10.5	11.5	13.5
History		11	13.5	15.0	17.0
Journalism		3	12.5	15.5	21.0
Mathematics		11	10.0	11.5	14.5
Philosophy		10	14.5	15.5	18.0
Physics	Non-Laboratory	9	13.0	13.5	17.5
	Laboratory	9	15.5	17.5	20.0
Political Science		10	14.0	15.0	17.0
Public Speaking		9	13.5	14.5	16.5
Psychology	Non-Laboratory	10	15.0	16.0	18.0
	Laboratory	6	15.0	17.5	22.0
Romance Languages		12	10.5	12.0	15.0
Sociology		7	14.5	16.5	19.5
Zoology	Non-Laboratory	8	14.0	15.5	20.0
	Laboratory	8	16.0	17.5	21.0
Education		8	14.5	16.0	19.0
Educational Administration		6	15.0	17.0	20.5
Educational Psychology		3	14.5	15.5	19.5
Theory and Prac. Teaching		5	16.5	18.0	21.5
Engineering Drawing	Non-Laboratory	3	11.0	14.0	15.0
	Laboratory	5	12.5	15.0	13.0
Chemical Engineering	Non-Laboratory	4	13.5	15.0	19.5
	Laboratory	4	13.0	15.5	21.0
Civil Engineering	Non-Laboratory	8	12.0	14.0	16.5
	Laboratory	8	11.5	14.0	17.0
Electrical Engineering	Non-Laboratory	9	12.0	14.5	17.0
	Laboratory	8	14.0	19.0	22.0
Mechanical Engineering	Non-Laboratory	9	12.0	14.5	17.0
	Laboratory	9	13.5	17.5	22.0
Agronomy	Non-Laboratory	5	15.0	17.5	17.5
	Laboratory	5	17.5	18.0	19.5

TABLE I. (*continued*) INDEXES OF TIME REQUIRED IN PREPARATION FOR TEACHING COLLEGE COURSES

Departments	Type of Course	No. of Estimates Used	Elementary Courses	Intermediate Courses	Advanced Courses
(1)	(2)	(3)	(4)	(5)	(6)
Animal Husbandry	Non-Laboratory	4	13.5	15.0	16.0
	Laboratory	4	13.5	14.5	15.0
Dairy Husbandry	Non-Laboratory	3	19.0	20.0	12.5
	Laboratory	3	19.5	26.5	23.0
Horticulture	Non-Laboratory	3	13.5	14.0	17.5
	Laboratory	3	17.0	18.0	18.0

as a base. In such a manner the table of indexes was made up, the fractions being put at their nearest half-unit.

So far, then, as the combined judgments of these deans are accepted as valid, this table of indexes indicates that the amount of time required in preparation for teaching twenty-five students in non-laboratory periods in elementary botany is 25 percent greater than that required to prepare to teach elementary college mathematics to twenty-five students for the same number of hours per week. The amount of time required in preparation for each double laboratory period in elementary college botany is 55 percent greater than that required for a single period of elementary college mathematics. In a similar manner, the index for each subject, may be secured. Note that in political science, for example, the index reveals that it requires 70 percent more time to prepare for teaching advanced courses than it does to prepare for teaching elementary college mathematics.

It seemed desirable to transmute these indexes of time requirements for preparation into a table of equivalents of teaching assignments in terms of hours of non-laboratory teaching, or double periods of laboratory, per week. In order to have a common base, fifteen hours of elementary mathematics teaching per week was arbitrarily chosen. This does not imply that fifteen hours of elementary mathematics is a proper teaching load, the question of proper load is not raised in this investigation. The use of that figure is to provide a basis of comparison with other subjects.

TABLE II. EQUIVALENTS OF TEACHING ASSIGNMENTS IN COLLEGE DEPARTMENTS

Departments	Type of Course	Hours per Week or Double Laboratory Periods per Week		
		Elementary Courses	Intermediate Courses	Advanced Courses
(1)	(2)	(3)	(4)	(5)
Botany	Non-Laboratory	12.8	11.8	10.0
	Laboratory	8.8	8.3	7.5
Chemistry	Non-Laboratory	12.0	11.5	10.0
	Laboratory	9.4	8.6	8.0
Classical Languages		15.0	13.2	11.5
Economics		11.8	10.9	9.4
English		11.2	10.2	9.4
Geology	Non-Laboratory	12.9	10.9	9.4
	Laboratory	9.4	8.3	7.8
German		14.5	13.6	12.2
History		12.2	11.2	10.2
Journalism		12.9	10.9	7.5
Mathematics		15.0	14.0	11.5
Philosophy		11.5	10.9	9.8
Physics	Non-Laboratory	12.5	12.5	10.0
	Laboratory	8.8	8.2	7.5
Political Science		11.8	11.3	10.2
Public Speaking		12.6	11.6	10.5
Psychology	Non-Laboratory	11.2	10.7	9.8
	Laboratory	9.0	8.3	7.0
Romance Languages		14.3	12.9	11.3
Sociology		11.3	10.5	9.2
Zoology	Non-Laboratory	11.8	10.9	9.0
	Laboratory	8.5	8.2	7.0
Education		11.5	10.7	9.4
Educational Administration		11.3	10.2	8.8
Educational Psychology		11.5	10.9	9.2
Theory and Prac. Teaching		10.5	9.8	8.4
Engineering Drawing	Non-Laboratory	14.0	11.8	11.3
	Laboratory	10.0	9.0	9.3
Chemical Engineering	Non-Laboratory	12.2	11.2	9.2
	Laboratory	9.8	8.8	7.2
Civil Engineering	Non-Laboratory	13.2	11.8	10.5
	Laboratory	10.4	9.3	8.3
Electrical Engineering	Non-Laboratory	13.0	11.5	10.2
	Laboratory	9.4	7.8	6.7
Mechanical Engineering	Non-Laboratory	13.2	11.5	10.2
	Laboratory	9.6	8.2	6.7
Agronomy	Non-Laboratory	11.3	10.0	10.0
	Laboratory	8.2	8.0	7.7

TABLE II. (*continued*) EQUIVALENTS OF TEACHING ASSIGNMENTS IN COLLEGE DEPARTMENTS

Departments	Type of Course	Hours per Week or Double Laboratory Periods per Week		
		Elementary Courses	Intermediate Courses	Advanced Courses
(1)	(2)	(3)	(4)	(5)
Animal Husbandry	Non-Laboratory	12.9	11.3	8.7
	Laboratory	9.5	9.2	9.0
Dairy Husbandry	Non-Laboratory	9.4	9.0	12.9
	Laboratory	7.6	7.4	6.8
Horticulture	Non-Laboratory	12.2	11.8	10.0
	Laboratory	8.3	8.0	8.0

In order to perform this transmutation, it was necessary to make an assumption as to the number of hours which constitute a standard week's work for a college teacher; this work was understood to include both the hours of teaching and the entire preparation for it. It is obvious that if we assume a standard week's work to be twenty hours in all, then fifteen hours of elementary mathematics teaching leave only five hours of preparation in all. Since the index 10 was arbitrarily taken as the base for mathematics, then 10 in the index table would stand for $\frac{5}{15}$ hours, or twenty minutes, the time allowed for preparation for each hour of teaching. Such a subject, for example, as elementary English with an index of 15, or 50 percent more, would thus require thirty minutes preparation for each class hour. Accordingly 13.3 periods per week of elementary English classes would be the equivalent of 15 periods of elementary mathematics.

If, on the other hand we assume a sixty-hour week as full time for a teacher, then each elementary mathematics teaching period would receive three hours of preparation. Elementary English, in turn, would require 4.5 hours of preparation per teaching period. Therefore 10.9 hours of English teaching would be equivalent to 15 hours of mathematics teaching.

From the above illustration it is clear that a certain standard week must be adopted before a table of equivalents can be made

out. For want of a better, the forty-five-hour week common to many lines of union labor was taken as the standard.

The formula for transmuting from indexes of time required for preparation, to equivalents in hours of teaching, is

$$H + \frac{I \times H}{5} = 45$$

H = hours of teaching per week
I = index of preparation found in the table of indexes
5, the denominator, is determined by the fact that the index base is 10, and in order that $\frac{I \times H}{X}$ shall equal $45-H$, X must equal 5

By the application of the above formula, Table II of equivalents in teaching hours for all non-laboratory subjects was made up.

For computing the number of double laboratory periods which are equivalent to fifteen hours of elementary mathematics teaching, the formula had to be modified to read,

$$2L + \frac{I \times L}{5} = 45$$

L = the number of double laboratory periods, namely, two-hour periods, and
I = the index number found in the table.

From this formula, the equivalents for laboratory courses found in Table II were computed. From this table, if we assume classes of twenty-five students each, a forty-five-hour week, and the validity of the deans' judgments, we may have a basis of answering the question, "How many hours of teaching in . . . . department, is equivalent to fifteen hours of elementary mathematics?"

Furthermore, if forty-five hours per week are not thought appropriate for a standard working week, another table of equivalents may be made for any other standard working week. This is done by substituting the preferred standard for 45 in the formula, and by changing 5 in the denominator of the fraction to a number found as follows: 150 divided by the whole number of hours of preparation time in elementary mathematics for the

week, namely, the working week less 15 hours. For example, if a sixty-hour week were taken, the formula would be:

$$H + \frac{I \times H}{3.33} = 60$$

Again, if some basis other than fifteen hours were desired for elementary mathematics as a starting point for the comparisons, another table of equivalents could be made by substituting in a formula a suitable number for 5. For example, if twenty hours of elementary mathematics were thought to be a proper or necessary assignment, then for a forty-five-hour week the formula would read

$$H + \frac{I \times H}{8} = 45.$$

The denominator is always the quotient obtained by dividing the product of 10 (the index for elementary mathematics) and the teaching assignment of elementary mathematics by the whole number of hours of preparation per week in elementary mathematics (namely, the standard working week minus the teaching hours). Thus either one of the arbitrarily fixed numbers, the basic hours of mathematics teaching or the standard working week, may be fixed at whatever point is agreed upon, and a new table of equivalents may be easily computed from the table of indexes.

Two conclusions may be drawn from this table of equivalents: (1) Even granting the inadequacy of the data, it seems clear that standardizing agencies should give up the use of a single number representing the maximum teaching assignment permissible alike in all departments; (2) the general practice of regarding two hours of laboratory teaching as equivalent to one hour of non-laboratory teaching needs investigation. Certainly its validity is challenged by these data.

A GRADE-PLACEMENT CURRICULUM INVESTIGATION

CARLETON WASHBURNE
Superintendent of Schools
Winnetka, Illinois

The next big problem in scientific curriculum construction is grade-placement. The technique of determining the subject-matter to be taught is fairly well developed; we know how to compare methods of teaching, but almost no work has been done to determine *when* to teach or *how* to teach subject-matter effectively for children of known age and ability. Since the basis of most instruction is reading, it is especially important to determine the types of reading material which fit children of various degrees of reading ability and of different chronological ages. Using such knowledge we could select suitable texts, where such exist, and could write stories for children with a reasonable chance of their being appropriate.

One means of determining what books are most suitable for children of various stages of development is to learn what books interest them. It is reasonably safe to assume that children in large numbers will not voluntarily read books to completion and enjoy them if the books are ill-adapted to their ages and reading abilities. If, therefore, by extensive inquiry the books which are most widely read and liked by children of various ages and known reading scores were determined, a scientifically graded book list could be prepared. Moreover, by the detailed examination of the books that fit each stage of advancement a scheme perhaps could be organized of analyzing books or instructional materials to ascertain their best grade-placement. Guided by these purposes the Winnetka investigation of children's reading[1] was begun.

[1] The Winnetka public schools, after some preliminary studies, requested and received from the Carnegie Corporation, and through the American Library Association, a grant to prepare a scientifically graded book list for children. Mabel Vogel, research assistant in the Winnetka schools, was released for this work and given the necessary clerical help.

Since we wanted to know what books are read and enjoyed by children generally, we secured the cooperation of eight hundred teachers in thirty-four different towns and cities, ranging in size from small places like Howell, Michigan and River Falls, Wisconsin, to Baltimore and Minneapolis. Some schools, such as the Beaver Country Day School, Moraine Park School, and the Francis W. Parker School, were private; others were connected with normal schools and universities; but most of the schools were public. The geographical locations ranged from Georgia and New Mexico on the south to Massachusetts and Montana on the north.

To determine the reading ability of the children who read each book, we furnished the teachers with copies of the paragraph-meaning section of the Stanford Achievement Test,[2] which they subsequently gave to 36,750 children. To ascertain what books these children were reading, how well they liked them, and how hard they found them, we furnished ballots. The form, which is reproduced in Figure 1, was devised and issued after preliminary study, experimentation, and discussion in the Winnetka schools had showed it to be valid. As soon as a child finished reading a book, he filled in the ballot. The teacher then entered the child's reading score, checked the accuracy of the data, and returned the ballot to us. Over one hundred thousand such ballots were received.

While the ballots were coming in, and after they had all arrived, we carried on a number of statistical studies to investigate the validity and reliability of our method. Since these studies are given in the introduction to the published book list[3] only a summary of a few of the most important need be given here.

We wondered whether the children were consistent in their ratings of books. As a first step we collected the ballots from three hundred children, and three weeks later we pretended

[2] We found the coefficient of correlation between this section of the test and the entire reading test to be $r = 0.96$, and therefore as a measure of economy gave the paragraph-meaning section only.

[3] Washburne, Carleton, and Vogel, Mabel. *Winnetka Graded Book List.* Chicago, American Library Association, 1926. 286 pp.

to the children that we had lost their ballots. We then had them vote again on the same books. When we compared these new ballots with the first ones, we found them remarkably consistent. Except for the 14 percent of the children whose rating dropped from "One of the best books I ever read" to "A good book, I like it," there were no significant changes. The children's ratings were apparently reliable.

Reading score .....

Complete title of book .....

Author's full name .....

Publisher .....

Child's name ..... Age ..... Boy or girl .....

School ..... Grade ..... Teacher .....

One of the best books I ever read ☐	Too easy - - - - - - ☐
A good book, I like it - - - - ☐	Just about right - - - - ☐
Not so very interesting - - - ☐	A little hard - - - - - ☐
I don't like it - - - - - - ☐	Too hard - - - - - - ☐

Write on the other side of this slip what you like best about this book, or why you like it.

FIGURE 1. THE BALLOT FORM FILLED IN BY THE CHILDREN

We had previously checked the validity of the ballot-records by having several hundred children read and vote upon two of the selections which Uhl[4] had studied in ways quite different from ours. Our results were so similar to his that each method

[4] Uhl, W. L. *Scientific Determination of the Content of the Elementary-School Course in Reading.* Madison, University of Wisconsin, 1921. 152 pp. (University of Wisconsin Studies in the Social Sciences and History, No. 4)

of investigation tended to confirm the validity of the other. When, after considerable preliminary experimentation, we tentatively decided to classify the books according to the median reading ability of the children who read and liked them, it was necessary to determine the validity and reliability of our scheme of classification also.

We found, in checking the reliability of our classification, that if we had as many as twenty-five ballots from several different schools for any one book, we could classify that book fairly accurately; our probable error did not exceed one school grade of reading ability, that is, we were not likely to classify any book more than one grade above or below its right place. Since our data showed that books are not confined to single grades but are widely read a grade above and a grade below the median, an error of one grade in classification was of minor importance.

As a means of determining the validity of our classification we gave to several hundred children books that were classified as belonging to grades different from their own. *Penrod*, for instance, was classified as an eighth-grade book; consequently we had children in the third, fourth, fifth, sixth, and seventh grades read and report on it. *Eskimo Stories*, which is classified as a third-grade book, we gave to children in grades IV to VIII. The results for twenty-five books given to three hundred children are shown in Figure 2, from which can be seen the fact that the classification has considerable validity.

As a more objective test of the validity of the classification, we took a thousand sample words from each of thirty-five books ranging from grade III to grade VIII and compared them with the lists in Thorndike's *Word Book*. We found that the correlation coefficient between the median index number of such sample words and the grade classification was 0.8. Similarly, the correlation between the percent of words in each book not included in the ten thousand most common words in the English language and the grade in which each book was classified was 0.8.

Having satisfied ourselves by these and other means that our investigation and the resulting classification were reliable and valid, we published our data in book form. The published list contains about seven hundred titles. We had reliable data on eight hundred; but a committee of expert children's librarians eliminated from these the titles of one hundred books which they

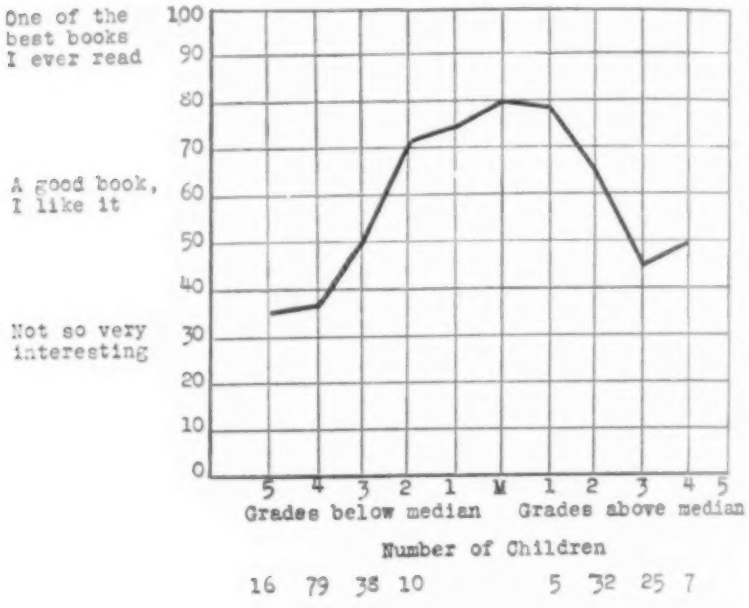

FIGURE 2

Read this graph as follows: 16 children reported on books which were classified five grades above their reading ability; their average rating on these books was "not so very interesting." 79 reported on books classified four grades higher than their reading ability. They rated the books, for the most part, as "not so very interesting"; etc.

considered unworthy from a literary standpoint or unsuitable for children. However, the titles of the eliminated hundred have been mimeographed with full data for the use of any persons who may wish to include them in further scientific studies.

The seven hundred books in the published list are classified, first according to the median reading grade of children who

read and liked them and then according to the median ages of these children. In the "Grade Lists" extensive information is given concerning each book. The following excerpt from the published list illustrates the type of data given:

> Black Beauty. Anna Sewell. Jacobs, $1.50. Dodge, $1.50.
> Black Beauty tells us how his master treated him kindly and sold him. The first master never used a bit in his mouth because he wasn't used to it. The second master treated him roughly and gave him a bit to put in his mouth.

	No.	Percent Liking	Value	Age	Reading Grade	Grades 4-5-6 (Percent)	Middle 50 Percent	Cities	Index
Boys....	266	95	79	11.2	5.7	64	5-6		
Girls....	272	91	75	10.7	5.8	64	5-6	29	1450

The comment upon *Black Beauty* is typical of the sorts of reasons children gave for liking a book. The statistical data is read as follows: Two hundred and sixty-six boys and 272 girls read and reported on the book. Ninety-five percent of the boys and 91 percent of the girls who read the book liked it. The average interest value given to the book by the boys was 79, and by the girls, 75. Children's reports on interest values have been given arbitrary numerical equivalents to make averaging possible. These equivalents are:

CHILD'S REPORT	NUMERICAL VALUE
One of the best books I ever read....	100
A good book, I like it.....	67
Not so very interesting.....	33
I don't like it.....	0

The median age of the boys who read and enjoyed the book was 11.2 years and that of the girls was 10.7 years. The median reading ability of the boys who enjoyed the books was 5.7 which lies between the standard for fifth and sixth grades as shown by the reading test; that of the girls who liked it was 5.8. Under the caption *Grades 4-5-6* are given the percents of boys and girls whose reading ages fell within one year of the median; both percents were 64. The middle 50 percent of the boys and the middle 50 percent of the girls who read and enjoyed the book had fifth- or sixth-grade reading ability. Reports summarized

in the table came from twenty-nine cities. The index of popularity is 1450. This index is the product of the number of children liking the book and the number of cities in which the book was read. As a matter of convenience these indexes of popularity, being rather large, were all divided by ten. The books are arranged within each grade according to this index of popularity, for it shows better than any other one factor how widely the book is read and liked.

Following the "Grade Lists" are the "Age Lists." In the latter lists the data appear in the following form:

Title	Index	Reading Grade	Age B.	Age G.	Age 50 percent B.	Age 50 percent G.	Page
Black Beauty, Sewell.	1450	5	11.2	10.7	10–12	10–11	76

These are interpreted as follows: The median reading grade of children who read and liked *Black Beauty* was between grades V and VI; so the book has been placed in a fifth-grade list. The median age of the boys who read and enjoyed the book was 11.2 years, and that of the girls was 10.7. The middle 50 percent of the boys who read and enjoyed the book were ten, eleven, and twelve years of age; the middle 50 percent of the girls who enjoyed it were ten and eleven years old. Full information on the book will be found in the "Graded List" on page 76.

The "Age List" is followed by a complete Index giving the author, title, and subject. In the Introduction, thirty-eight pages in length, the statistical procedure by which the list was derived is described in detail.

While the *Graded Book List* as it stands doubtless fills a need, it is only the first step toward a series of grade-placement studies now under way or contemplated in Winnetka. After all, the book list, even with its mimeographed supplement of "trashy" books, contains only eight hundred titles. Our data include the titles of over nine thousand books read by children in the elementary grades, but we have not enough reports to justify the classification of the majority of these titles. Furthermore, new books are constantly appearing. To what grade shall they

be assigned? And if one wishes to write curricular material for children of a given grade, what guide should he use?

As a part of our grade-placement program of research, and as at least a partial answer to these questions, we are making an extensive analysis of some of the books included in the list. We have, for the time being, confined ourselves to fifteen or twenty typical books of each grade. These were selected according to the following criteria: (1) The grade-placement and age classification of the book must correspond within a year; for example, the median age of children liking a fourth-grade book must, for this purpose, be within six months of nine years. (2) The average interest-value rating by children must be at least "A good book; I like it." (3) A minimum of 70 percent of the children who read and enjoyed the book must fall within a grade of the reading grade under which the book is listed.

We are analyzing these books according to the items given in the outline which immediately follows, and we shall determine the coefficients of correlation between each measure and the grades in which the books are classified, where such coefficients can be found. In every case we shall represent graphically the increase or decrease of each measure from grade to grade. The items to be considered when analyzing the books are:

I. Appearance
   1. Size of type
   2. Number of illustrations
   3. Length of line
   4. Length of book (that is, number of words)

II. Form
   1. Commonness of words
   2. Proportion of conversation and description
   3. Number of words in a paragraph
   4. Number of words used to present a unit idea
   5. Proportion of words with sensory content
   6. Proportion of each part of speech, with special distinction between abstract and concrete nouns and verbs expressing some or no action
   7. Length of sentence[8]

[8]Much of the work on this and topics 8, 9, and 10 is being done by Miss Bessie Yeoman, a graduate student at Northwestern University, in preparation for her Master's degree.

8. Structure of sentence (simple, compound, complex)
9. Number and kinds of subordinate clauses
10. Number and kind of phrases
11. Length of paragraphs
12. Length of chapters

III. Content

1. Recapitulation of racial development (ontogenetic and philogenetic)
2. Subject-matter making possible the identification of one's self with the principal characters
3. Degree to which subject-matter of different grades deals with animals, travel, adventure, the nonsensical and grotesque, fairies, supernatural, battles and wars, realism, etc.

The above list is not exhaustive, there being several other elements which appear less promising but which will be followed up. Some of the elements listed may prove of very little value. The investigations actually in progress at present are principally those under the heading *Form* in the outline.

Our study has proceeded far enough so that we can say with considerable certainty that there is a clear relationship between length of book, length of sentence, difficulty of vocabulary, complexity of sentence structure, and number of clauses and phrases, on the one hand, and, on the other, the grade in which books are most widely read and enjoyed. Before long we shall know the limits in each of these particulars beyond which books intended for a given grade cannot safely go.

When this investigation is completed, sample curricular materials will be prepared in accordance with the criteria established and will be used in different school grades to test the validity of the criteria. These studies should serve to stimulate grade-placement research elsewhere and should form a firm first step toward a scientific organization of curricular materials.

Editorials

A BATTLE ROYAL

In prehistoric times, the fighting instincts contributed so greatly to man's survival, that to this day among all members of the human race a high degree of interest still persists in every form of competition. Among savage peoples, as the advance in culture and civilization ameliorated the conditions of the daily struggle for existence, savage instincts found release in savage forms of play. Gladiatorial combats, tournaments, bull fights, and similar contests, among which must be included aggressive warfare, bear witness to the strength of "the lust to kill" and to the power of a struggle "to the death" to stir and hold human interest.

In modern man sublimation has proceeded much farther. The taking of life, even in war, is no longer given complete social sanction. Yet the wild enthusiasm of college students at a football game, the pulling power of the "thriller" movie, the insanity of mob violence are proof that passions buried deep under a thousand repressions may yet break out of bounds and dominate action.

The veneer of civilization is largely the negative veneer of repression. Creative *ex*pression, not unhealthy *re*pression, would be far better for all concerned. The emasculated, colorless individual without passion and without power merits the contempt he universally receives. To qualify as a real "he man," there must be capacity for strong emotions and for depth of passion. In the ideal person, however, this emotional energy does not run wild but is directed toward worthy ends. By rational control it is made to contribute to efficient achievement. It is both the driving power of life and the source of its greatest joy.

Unfortunately the vision of the richness of such complete living has been appreciated by but few. On every hand the real menace of the strangling power of ignorance and greed, lust and hate, is sensed only by an occasional individual here and there. Yet the sociologists have proved conclusively that the human race is engaged in a war more deadly, more relentless, more fraught with dreadful consequences to all concerned than all the wars of history combined. *So far not a single member of the human race except the present generation whose battles are not yet over has escaped death in the unequal contest.* Our city streets swarm with individuals who mentally and spiritually, as well as physically, may be justly described as the maimed, the halt, and the blind. Day in and day out, all round the world, the funeral trains of those who have fallen in the fight wind their way ceaselessly to the cities of the silent dead. Yet the victories already won, the power of man's growing control over the forces of nature, foretell the ultimate conquest when even "the last enemy death" shall be overcome.

The great need in education is for a technique of interpretation of life to the oncoming generation that will enlist their hearts, minds, and wills in the collective struggle for human betterment. The most important research is that which will reveal the principles by which emotional energies may be liberated and organized for effective action.

The first step, however, is to see clearly and live rightly ourselves. We are in a transition age when battle lines are forming along new fronts and where the rapidly changing alignment makes it possible to discern what before was safely camouflaged from view. For instance, city after city through constructive research is devising and printing new forms of curricular material. Old courses of study are being discarded. Textbooks are being made over. Lesson materials are being individualized. A great era of change is under way.

But what about the obstacles to change? From what quarter does opposition arise? To him who has eyes to see, a great battle looms—a battle of progress versus profits. On the one

hand is the new knowledge, zeal for discovery, earnest desire to make education more effective and more beneficial to children. On the other hand are the vested interests, book companies, publishing houses, salesmen, bribe-taking officials, and all others whose material gain is decreased when cities *publish their own material* and change it at each printing. Already the question is being asked, "How far is this thing to go?" Already mysterious influences have operated to obstruct and to limit research. Here and there men have lost positions for reasons which one suspects were not the true reasons. Even where no sinister influence strikes to inflict a mortal wound, progress is retarded by the power which monopoly has of dictating not only the form but also the content of what is accepted for publication. If the fighting were in the open, there would be no doubt about the issue, but the fighting is not in the open. Hidden snipers and enemies disguised as friends continually pick off advance workers. The textbook field is but one of many battle fronts. It is high time that for its own protection the teaching profession awake to the magnitude and real significance of the contest in which it is engaged.

S. A. C.

Reviews and Abstracts

WINCH, W. H. *Teaching Beginners to Read in England: Its Methods, Results, and Psychological Bases.* Bloomington, Illinois, Public School Publishing Company, 1925. 185 pp. (Journal of Educational Research Monographs, No. 8)

All students of education—not alone those of beginning reading—will be pleased with a little book just published by the English psychologist, W. H. Winch, entitled *Teaching Beginners to Read in England.* The title page states that the author is chairman of the Committee of the Educational Guild of Great Britain and Ireland on Psychological Research in Schools, and author of a half dozen or more volumes on educational research. This prepares us for the solid character of the work given in the present volume, but not for its remarkably concise and clear presentation, or for the vividness with which the actual experimentation is described. In fact, Professor Winch has shown in this work a combination of two qualities far too rarely combined. He shows a remorseless care in adhering in every detail to scientific procedure, and he demonstrates fully the most striking understanding of and sympathy with the children who were used as "subjects." The occasional notes he gives on the spontaneous reactions of the children being taught and tested indicate that he understood what was going on in their minds and is correctly reporting both conditions and results.

The author first describes what we would call a careful study of the results of various methods of teaching reading. With all possible checks and cautions, he tested children who had learned reading in different ways. He refers to his activities as observations, however, thus purposely suggesting by the name the weight he now places upon the method used. "Observing" that all methods seemed to teach reading quite well when in the hands of efficient teachers, he saw the necessity for searching investigation. He then planned and carried through most carefully controlled experiments, contrasting in pairs four methods of teaching beginning reading, the alphabetic, the look-and-say, the phonic, and the phonoscript. Not content with equalizing groups by intelligence tests, he devised, perfected, and applied a special test for capacity of learning to read. After each period of teaching, he gave not one final test but a group of three or four tests devised to meet all possible objections that might occur to the sceptical. Realizing the relation of reading to spelling, he carefully tested that aspect of the situation.

The results procured are perhaps not startling, but they are highly significant, because they cannot be dismissed by a criticism of method. Perhaps they do not settle which is the best way to teach beginning reading, because no single experimentation can settle such a large and complicated question,

but they give a feeling of assurance that we are now on the road to solving this vexing problem. The little book quite clearly points the way by which other students of the question, with more time and more facilities, but with equal care, may assemble the further facts that may decide the matter.

At the same time, those concerned with primary education in any form will receive valuable suggestions from Mr. Winch's descriptions of how the children attacked the work put before them. In the analysis of their errors, for instance, is much material for the child psychologist. All in all, the book will be of interest and of value to anyone who is seeking to think scientifically about the work of children in the first year of school.

University of Illinois E. W. DOLCH

GRAY, W. S. *Summary of Investigations Relating to Reading.* Chicago, University of Chicago, 1925, 275 pp. (Supplementary Educational Monographs, No. 28)

The purpose of this monograph, as stated by the author, is "to summarize for the use of teachers, supervisors, and investigators the results of scientific studies relating to the problems of reading instructions." In other words, the book attempts to give to those interested in reading the results of scientific investigations as they relate to the problems of the curriculum, methods, and aims of this subject. The investigations have been evaluated not as technical researches within themselves, but as they relate to the major problems just enumerated. This is a type of work which many teachers of reading have desired, because the relation of the results of technical investigations in reading to classroom work is often not apparent.

The author states clearly that space does not allow a critical evaluation of the many investigations and that certain general problems are discussed only briefly. For this reason it seems that the chief value of the text for investigators lies in the bibliography and the suggestions of problems for further investigation.

Seventeen major topics are treated. Among these are: reading in its relation to school activities, the value of silent reading, aims of reading, individual differences, the relative values of different methods of teaching beginning reading, and habits of recognition. Probably the best chapter has to do with intelligent interpretation. Here we find discussed such topics as the nature of intelligent interpretation and the three phases of its growth; conditions accompanying differences in comprehension and the relation of specific factors to it are also considered.

Throughout the book all points of controversy such as those which relate to the distribution of attention in the recognition of words or the relation of imagery to meaning, receive slight attention. This is probably in harmony with the purpose of the author. The omission of the terms reading age and accomplishment quotient may also be mentioned. The acceptance of these concepts as useful devices by many teachers would seem to warrant some discussion of them.

The last two chapters are disappointing. One of these, devoted to diagnostic and remedial work, gives brief attention to this important topic, per-

haps because the author has recently covered the subject in a thorough-going fashion. The discussion of reading tests given in the last chapter would have been more in harmony with the purpose of the text if the subject had been treated from the standpoint of a testing or measurement program for the classroom teacher.

A point of interest to the critical reader is that this summary shows some evidence of a revival of interest in oral reading. One chapter is devoted to this type of reading, and here are found among other references those which are concerned with the element of rhythm in language. This is practically a new departure in the discussion of reading.

Another point of interest is the extent of the work which has been done in this field. This point is brought out in the discussion of the early chapters in an unusual way by tracing the increase in the number of investigations through a period of years. Even the well-trained student is made to realize this point vividly when he attempts to pass from a critical understanding of the work of Erdmann and Dodge, and Zeither to a critical understanding of the elaborate statistical procedure which underlies many of the best reading tests.

In conclusion, it may be said that the book merits careful consideration because the point of view has distinct value, the material presented is well organized and set forth in a clear and definite way, and the extensive development in the field of reading demands such a summary.

University of Texas C. T. GRAY

BUSWELL, GUY THOMAS, and JUDD, CHARLES HUBBARD. *Summary of Educational Investigations Relating to Arithmetic.* Chicago, University of Chicago Press, 1925. 212 pp. (Supplementary Educational Monograph, No. 27)

In the present era of renewed interest in the teaching of arithmetic there has been an ever-growing need for a reliable and comprehensive summary in one volume of the results of research. This monograph has been written for the purpose of meeting this need. An extensive bibliography was gathered including the books and articles which report scientific investigations of the methods and results of the teaching of arithmetic. From this bibliography eliminations were made in accordance with the following principles: (1) Books and articles containing nothing but opinion or unsupported recommendations were eliminated. (2) Purely routine applications of arithmetic tests in local surveys were disregarded. (3) Articles reporting the use of number problems for the purpose of testing general mental conditions—were excluded unless they threw light on the arithmetical processes as well as on the general conditions investigated. The application of these principles left a list of 320 references which can be described as reporting objective data, more or less critically gathered, on the various problems which arise in the organization of arithmetic teaching.

The authors state as their purpose:

To contribute to new lines of thinking and investigation and to a more vigorously constructive program in arithmetic by bringing together, in as com-

pact a summary as possible, the suggestions which are to be found in the literature of educational tests and curriculum and administrative studies.

The authors "have attempted to avoid any appearance of imposing their own theories with regard to arithmetic on the body of results here presented" though they have not entirely refrained from making comments upon them.

It is impossible to summarize the wealth of useful and valuable information in the monograph, because the book is itself a summary. A valuable and careful résumé of the history of arithmetic in the United States is given in the first two chapters. Chapters on "Investigations of Textbooks and Exercise Materials," "Tests and Measurements in Arithmetic," "The Nature of Arithmetic Processes," "Drill," "Individual Differences and Remedial Methods," "Methods of Teaching," and "Relation of Arithmetic to Reading and the History of Arithmetic" follow. The monograph closes with a bibliography containing 320 references.

The monograph is presented in condensed form and is for that reason somewhat difficult reading for the beginning teacher. It is well worth studying, however, and will yield rich returns to those who master its contents. No person who pretends to be up with the times in arithmetic teaching can afford to be without it.

W. J. OSBURN

Madison, Wisconsin

MELCHIOR, WILLIAM T. *Insuring Public-School Property.* New York, Teachers College, Columbia University, 1925. 186 pp. (Teachers College, Columbia University, Contribution to Education, No. 168)

Considering its potentialities, the science of school administration is perhaps as yet only in the stage of infancy. The advance of this science, like that of all sciences, through the stages of childhood, youth, and old age is dependent upon scholarly experimentation and research. That much research in school administration has been appearing—particularly on the educational aspects of the field—everyone conversant with the literature knows. On the business management phase of school administration, however, little research has been done. Although numerous important studies have appeared on the educational phases of school administration, we can almost count on the fingers of one hand those that are devoted primarily to the business phases of school administration. Yet the importance of properly conducting the business side of the schools becomes at once evident when we note that the educational side cannot function at maximum efficiency unless the business management of schools is properly conducted.

In view of the above considerations the study by Dr. Melchior on one phase of the business management of schools, namely that of insuring public-school property, is particularly welcome. It is doubly welcome because it treats of an important phase of business management—a phase that has been almost totally neglected. It is thrice welcome because it is an eminently scholarly production, being one of the best doctor's theses the present reviewer has ever read. It has the earmarks of a scientific document, is well organized, and easily read.

Briefly stated, the study is chiefly one of insurance practices, costs, and losses on the school property of New York State. It also includes a general report on insurance practices in fifty-nine of the larger cities of the United States, the legal status of school property insurance in the several states, and a "symposium" by thirty insurance executives on "Public Schools as Insurance Risks."

The limits set for this review will not permit a description of the method used in the study, nor will they permit a mention of any of the hundreds of interesting facts revealed by the investigation. Suffice it to say that this should be read by everyone who has the responsibility for looking after the insurance of school property. The study is an outstanding contribution.

WARD G. REEDER

Ohio State University

IRWIN, ELISABETH A., and MARKS, LOUIS A. *Fitting the School to the Child.* New York, Macmillan Company, 1924. 329 pp.

Since fitting the school to the child is one of the foremost educational problems confronting school administrators and teachers today, the title selected by the authors of this book arouses immediate interest. In the foreword, we are informed that this is "the story of an experiment in grading children in one of New York City's largest public schools. (P. S. 64)" It is rather difficult, in many of the chapters, to disentangle the "story of the experiment" from general discussions and philosophies of educational practice and malpractice as viewed by the authors.

An elementary school of three thousand pupils was grouped by a scheme of classification into ten types of classes: (1) Terman classes for gifted children, (2) classes for superior children, (3) for those slightly above average, (4) for average children, (5) for those slightly below average, (6) opportunity classes for the backward, (7) ungraded classes, (8) classes for the neurotic, (9) for the physically handicapped, and (10) for foreign children.

The theory of those directing the experiment is "so long as the child has no alternative but to attend school, we should strive to make it *his* school in the sense that it adapts itself to *his* educational needs." The authors rightly insist that classification and vocational counseling must begin in the first grade. Mental tests are wisely used with other factors in the study of individual differences.

The physician, the home teacher, the vocational counselor, the psychologist, the parent, the neighborhood clubs, and the teacher all cooperate in understanding and directing the child. "The first consideration with every child is this: What kind of school experience is going to contribute most to his own personal and social fulfillment?"

The chapters offering the greatest contribution to new developments in school practice are "The Neurotic Child," "The Gifted Child," "Vocational Counseling," and "Health Education." The style is clear, and the tables and data are plainly presented. The experiment was real; the results, practical; the forward look, hopeful and reasonable. The book deserves the

serious attention of teachers, school administrators, and social workers everywhere.

VIRGIL E. DICKSON
Bureau of Research and Guidance, Berkeley, California

SAYLES, MARY B. *The Problem Child in School.* With a description of the purpose and scope of visiting-teacher work by Howard W. Nudd. New York, Joint Committee on Methods of Preventing Delinquency, 1925. 287 pp.

This is a timely and inspiring book for teachers, parents, and social workers. It consists of a series of case studies of children who presented problems of behavior which the traditional school could not solve. In most instances children who are problems of behavior in school are also children whose school progress is unsatisfactory. The child who fails to make a successful adjustment to school life is usually the one who later fails to adjust himself to the social and industrial life of adult years. The visiting teacher who applies modern principles of mental hygiene and of social-case work to the task, is able to rescue many of these children from social and educational failure and to start them upon the path of success. The series of case studies here given illustrates the types of problem children found in every school system and the methods of treatment which have proved successful in overcoming them. Progress in dealing with the behavior of human beings is such that concrete and detailed illustrations are more helpful than abstract principles.

The studies are grouped under several headings, parental attitudes, feelings of inferiority, questions of honesty, sex problems, and diverse issues. As Miss Sayles points out, no problem is so simple as to belong exclusively under one head. The cases were classed under what seemed the most significant problem. Some of the points of special interest which these stories vividly illustrate are the great importance of home atmosphere and parental attitude in fixing the course of a child's life; the disastrous effects of leaving a child under conditions such that he has no chance to succeed but must endure continuous failure; the magic that sympathetic understanding may work in changing a child's attitude; the regenerating effect of wholesome recreation; the rapidity with which some children who have seemed hopeless to the school may be reformed; and the harmfulness of fear and repressive measures as agents for the control of behavior.

After reading the life histories in the first part of the book, one is ready to agree heartily with Mr. Nudd that the addition to our educational system of experts like the visiting teachers, experts who have the point of view and the technique of case work and of mental hygiene—constitutes the next great move in education. No other plan of campaign holds out the same hope for reducing delinquency and the defects of personality which hamper so many lives. The early detection of abnormalities of attitude and behavior and the application of preventive measures at the time when the hope of success is greatest are possible to the school alone.

Merrill-Palmer School HELEN T. WOOLLEY

Publications Received, January 15 to February 15

Adams, L. M. *A simple Bible course for daily vacation Bible schools, with full program for each day; primary grade.* Philadelphia, American Sunday-School Union, 1925. 53 pp.

Adams, L. M., and McConaughy, James. *A simple Bible course for daily vacation Bible schools, with both old and new testament lessons for each day; junior grade.* Philadelphia, American Sunday-School Union, 1925. 51 pp.

Aldredge, E. M., and McKee, J. F. *The foxy squirrel color completion stories; for the first grades.* Cleveland, Ohio, Harter School Supply Co., 1925. $.50 per set.

Almack, J. C., and Bursch, J. F. *The administration of consolidated and village schools.* Boston, Houghton Mifflin, 1925. 466 pp. $2.40.

Andersen, H. C. *Los méjores cuentos de Andersen, narrados para los niños de habla española.* Ed. by Carmen García Méndez. Chicago, Rand McNally, 1925. 186 pp. $.90.

Blackmar, F. W. *History of human society.* New York, Scribner, 1926. 512 pp. $3.00.

Borden, R. C., and Busse, A. C. *Speech correction.* New York, F. S. Crofts & Co., 1925. 295 pp. $3.50.

Burleson, D. S. *Applied English grammar.* Boston, Allyn & Bacon, 1925. 381 pp. $.92.

Carpenter, W. W. *Certain phases of the administration of high school chemistry.* New York, Teachers College, Columbia University, 1925. 74 pp. (Contributions to education, no. 191) Cloth, $1.50. Paper, $1.25.

Clapp, F. L. *The Clapp drill book in arithmetic.* New York, Silver, Burdett, 1926. Fourth year. 101 pp. $.44. Fifth year. 112 pp. $.44. Sixth year. 123 pp. $.48. Seventh year. 121 pp. $.48. Eighth year. 123 pp. $.48. Teachers manual. 43 pp. $.40.

Campagnac, E. T. *Education in its relation to the common purposes of humanity.* New York, Pitman & Sons, 1925. 171 pp. $1.50.

Denney, J. V., and others. *Our English.* New York, Scribner, 1926. Book I. 298 pp. $.76. Book II. 310 pp. $.80. Book III. 437 pp. $.96.

DuPuy, W. A. *Our insect friends and foes.* Philadelphia, Winston, 1925. 275 pp. $.80.

Elson, H. W. *United States, its past and present.* New York, American Bk. Co., 1926. 550 pp. $1.60.

Foster, W. E., and Arms, S. D. *First year Latin.* Richmond, Va., Johnson Pub. Co., 1925. 351 pp. $1.28.

Fox, Charles. *Educational psychology, its problems and methods.* New York, Harcourt, Brace, 1925. 380 pp. $3.75.

Fowlkes, J. G., and Carlile, A. B. *Bibliography on school buildings.* Madison, Wis., Univ. of Wisconsin, 1925. 76 pp. (Bureau of educational research bulletin, no. 6) $.20.

Goldstein, Florence, and Goldstein, Mabel. *Descriptive silhouettes; silent reading seatwork for primary grades.* Cleveland, Ohio, Harter School Supply Co., 1925. Per set, $.40.

Harrington, K. P. ed. *Mediaeval Latin.* Boston, Allyn & Bacon, 1925. 698 pp. $2.80.

Harter's small number cards in strips. Cleveland, Ohio, Harter School Supply Co., n. d. Per set, $.07.

Hayn, J. J. H. *A geometry reader.* Milwaukee, Bruce Pub. Co., 1925. 316 pp. $1.80.

Horwill, H. W. *The usages of the American constitution.* New York, Oxford Univ. Press, 1925. 251 pp. $3.50.

Howe, F. W. *Farm economics.* New York, American Bk. Co., 1926. 221 pp. $1.20.

Kendall, James. *Intermediate chemistry companion.* New York, Century, 1925. 197 pp. $1.35.

Kirk, J. G., and Mumford, G. E. *Dictation for modern business.* Isaac Pitman ed. Philadelphia, Winston, 1925. 435 pp. $1.40.

Kitson, H. D. *The psychology of vocational adjustment.* Philadelphia, Lippincott, 1925. 273 pp. $3.00.

Kleist, J. A. *A practical course in Latin composition.* Chicago, Loyola Univ. Press, 1925. 80 pp. $.80.

McLean, Stafford, and Fales, H. L. *Scientific nutrition in infancy and early childhood for the student and general practitioner.* Philadelphia, Lea & Febiger, 1925. 404 pp. $3.75.

Mahaffey, C. E. *Practical visual education; a survey of the use of stereographs, slides and motion pictures in education with some suggestions on procedure.* Rudolph, Ohio, The Author, 1925. 78 pp.

Meltzer, Hyman. *Children's social concepts, a study of their nature and development.* New York, Teachers College, Columbia University, 1925. 91 pp. (Contributions to education, no. 192) Cloth, $1.50. Paper, $1.25.

Myers, G. C. *Story starters.* Cleveland, Ohio, Harter School Supply Co., 1925. Sets 1-2. $.40, each.

Nicklin, T. *Standard English pronunciation with some notes on accidence and syntax.* Oxford, Clarendon Press, 1925. 101 pp. $1.00.

O'Brien, J. A. *Reading: its psychology and pedagogy.* New York, Century, 1926. 308 pp. $2.00.

Ohio State University. *Proceedings of the fifth annual session of the Ohio state educational conference.* Columbus, Ohio, Ohio State Univ. 1925. 495 pp. (Ohio State University bulletin. Vol. 30, no. 2)

Osburn, W. J. *Corrective exercises in the fundamentals of arithmetic.* Boston, Houghton Mifflin, 1925. Grade 2, $.28. Grade 3, $.40. Grade 4, $.40. Complete, $1.60.

Overman, J. R. *Principles and methods of teaching arithmetic.* Chicago, Lyons & Carnahan, 1925. 342 pp. $1.00.

Patchwork posters from Mother Goose. Cleveland, Ohio, Harter School Supply Co., 1925. Per set, $.50.

Peterson, J. O. *Plainer penmanship for high schools and junior high schools.* Milwaukee, Bruce Pub. Co., 1925. 144 pp. $1.60.

Raup, R. B. *Complacency, the foundation of human behavior.* New York, Macmillan, 1925. 201 pp. $2.00.

Reeder, E. H. *A method of directing children's study of geography.* New York, Teachers College, Columbia University, 1925. 98 pp. (Contributions to education, no. 193) Cloth, $1.50. Paper, $1.25.

Riess, Ernst. *Latin drill book.* New York, Globe Bk. Co., 1925. 114 pp. $.60.

Schwartz, I. A. *French grammar review.* New York, Harcourt, Brace, 1925. 266 pp. $1.20.

Scudder, J. W. *Easy Latin, a reader for beginners.* Boston, Allyn & Bacon, 1925. 307 pp. $1.25.

Smith, Alexander. *Smith's intermediate chemistry.* Rev. and rewritten by James Kendall and E. E. Slosson. New York, Century, 1925. 566 pp. $3.25.

Smith, E. L. *Everyday science projects.* Boston, Houghton Mifflin, 1925. 341 pp. $.96.

Smith, O. S. *Smith's applied arithmetic.* Chicago, Lyons & Carnahan, 1925. 313 pp. $1.28.

Smith, O. S. *Smith's arithmetic of business.* Chicago, Lyons & Carnahan, 1925. 474 pp. $1.48.

Terman, L. M., and Lima, Margaret. *Children's reading, a guide for parents and teachers.* New York, Appleton, 1926. 363 pp. $2.00.

Van Buskirk, E. F., and Smith, E. L. *The science of everyday life.* Rev. and enl. ed. Boston, Houghton Mifflin, 1925. 498 pp. $1.60.

Washburne, Carleton, and Vogel, Mabel. *Winnetka graded book list.* Chicago, American Library Assn., 1926. 286 pp. $1.75.

Watkins, Emma. *Lippincott's silent reading for beginners.* Teachers' ed. Philadelphia, Lippincott, 1925. 105 pp. $.60.

News Items and Communications

This department will contain news items regarding research workers and their activities. It will also serve as a clearing house for more formal communications on similar topics, preferably of not more than five hundred words. These communications will be printed over the signatures of the authors. Address all correspondence concerning this department to Doctor E. J. Ashbaugh, Ohio State University, Columbus, Ohio.

We are glad to welcome to the field of educational journalism a new magazine published by the Colorado State Teachers College. The first issue of this periodical has just been received. It is called the *Teachers Journal and Abstract* and will appear eight times per year and cost $2.00. President Frasier is editor; Dr. E. U. Rugg, head of the Department of Education, managing editor; and Dr. H. S. Ganders, professor of educational administration, assistant editor. The advisory board of twenty-four members includes a number of well-known workers in the various fields of education.

The State Department of Education of Ohio requires uniform examinations to be given to prospective graduates of two-year teacher-training courses who are candidates for the four-year provisional certificate. Among the subjects included in the examination is psychology. Ten questions out of thirty in this subject with the answers written by a student were mimeographed and sent to various teacher-training institutions by Professor H. N. Irwin of the Cleveland School of Education. These papers were accompanied with the request that the papers be scored on the basis of zero to three and one-third for each question. Returns from twenty-four instructors in various institutions within the state showed that each of the questions was given a perfect score by one or more of the instructors and also received a zero score by one or more others. It is evident that the examination was not sufficiently objective to guarantee even a relative uniformity in grading.

The Committee in charge of the Modern Foreign-Language Study is issuing a series of bulletins with respect to the work of the Committee. These bulletins should be of particular interest to teachers of modern foreign language and to research workers in this field. Copies of the bulletins as they appear may be secured by writing to Dr. Robert Herndon Fife, chairman of the Committee, 561 West 116th Street, New York City. The success of the study is directly dependent upon the willing cooperation of many classroom teachers and school administrators.

The general fields to be investigated are: (1) vocabulary, (2) silent reading or comprehension, (3) translation into English, (4) translation from English, (5) written composition, (6) grammar, (7) pronunciation, (8) aural comprehension, and (9) oral composition.

One bulletin, which has already appeared, gives the immediate objectives of instruction and the ultimate goals to be attained through modern-language study. One hundred and twenty-three different problems are listed.

Some Correlations in a Teacher-Training Class

Complete records on seven tests, university scholarship grades, and ratings by the supervising teacher were available for sixty Arts graduates of the University of California who were doing their fifth year of college work in preparation for the regular secondary credential for teaching. The tests and measures used were: Otis Self Administering Group Test; Army Alpha Test, Form 8; scholarship record, as shown by the permanent university records; rating cards,

TABLE I. THE CENTRAL TENDENCIES AND SPREAD

Test	Minimum	Maximum	Mean	(Sigma) S. D. M.
Otis	42	74	60.57	7.44
Army Alpha	98	192	159.20	20.50
Scholarship	2.9	1.3	2.05	0.37
Supvr. Rating	62	103	81.48	11.41
Spelling	5	10	8.63	1.39
Opposites	7	10	9.73	0.97
Analogies	7	10	9.3	0.9
True-False	3	10	5.8	1.54
Super. Adult	4	9	7.2	1.23

TABLE II. CORRELATIONS BETWEEN FACTORS USED IN THE INVESTIGATION.

Factors	r	P. E.
Otis and Alpha Army	0.668	0.048
Otis and Scholarship	0.610	0.055
Army Alpha and Scholarship	0.586	0.058
Army Alpha and Spelling	0.546	0.061
Otis and Spelling	0.509	0.064
Spelling and Opposites	0.489	0.066
True-False and Opposites	0.430	0.071
Scholarship and Spelling	0.420	0.071
Army Alpha and Super. Adult	0.330	0.078
Otis and Analogies	0.325	0.078
Analogies and Opposites	0.295	0.079
Otis and Superior Adult	0.293	0.080

as reported by the supervising teachers; a spelling test, Ayres Scale, words upon which eighth grades make 70 percent; opposites test, from Mentimeter Text, Trabue and Stockbridge; analogies test, from Mentimeter Test, Trabue and Stockbridge; true and false test, theoretical questions in pedagogy; Su-

perior Adult Test, an adaptation from the Stanford Revision of the Binet Tests given as a group test in this case.

Table I presents the central tendencies and spread for each of the measures. The table is read as follows: In the Otis Test the minimum score was 42; the maximum, 74; the mean, 60; the standard deviation from the mean, 7.4.

Of the 36 possible correlations, twelve were found to be greater than three times the probable error. Table II shows for these twelve pairs of factors the coefficients of correlation and their probable errors. It is interesting to notice that eight of the nine measures appear in this group, the rating of supervisors being the only item which did not correlate sufficiently high to be included.

J. W. GROVES

University of California

A Six-Foot Shelf for a School Principals' Professional Library

DON C. ROGERS

Special Secretary, Chicago Principals' Club

The following books represent the most frequent recommendations in the various fields of education as secured by a questionnaire answered by forty-five educators in six leading universities and one normal college in the middle west.

BUILDING AND GROUNDS

Cooper, F. I. *Schoolhouse Planning.* Report of the Committee on Schoolhouse Planning of the N. E. A. (Washington, D. C., N. E. A., 1925)

Commission on Reorganization of Secondary Education. *High-School Buildings and Grounds* (Washington, D. C., Government Printing Office, Bulletin No. 23, 1922)

CHILD-ACCOUNTING

Moehlman, A. B. *Child-Accounting* (Detroit, Michigan, Friesema Brothers Press, 1924)

CURRICULUM

Bobbitt, F. *How to Make a Curriculum* (Boston, Houghton Mifflin Company, 1924)

Charters, W. W. *Curriculum Construction* (New York, Macmillan Company, 1923)

Bobbitt, F. *The Curriculum* (Boston, Houghton Mifflin Company, 1918)

Cox, P. *Curriculum Adjustment in the Secondary School* (Philadelphia, J. B. Lippincott Company, 1925)

EDUCATIONAL PHILOSOPHY

Dewey, John. *Democracy and Education* (New York, Macmillan Company, 1921)

Kilpatrick, W. H. *Source Book in the Philosophy of Education* (New York, Macmillan Company, 1923)

Worthington, Eleanor. *Rousseau's Emile* (Boston, D. C. Heath Company, n. d.)

EDUCATIONAL PSYCHOLOGY

Gates, A. I. *Psychology for Students of Education* (New York, Macmillan Company, 1924)

Thorndike, E. L. *Educational Psychology.* Three volumes. (New York, Teachers College, Columbia University, 1921)

Starch, D. *Educational Psychology* (New York, Macmillan Company, 1924)

Freeman, F. N. *Psychology of the Common Branches* (Boston, Houghton Mifflin Company, 1916)

EDUCATIONAL SOCIOLOGY

Smith, W. R. *An Introduction to Educational Sociology* (Boston, Houghton Mifflin Company, 1917)

Peters, C. C. *Foundations of Educational Sociology* (New York, Macmillan Company, 1924)

Snedden, D. *Educational Sociology* (New York, Century Company, 1922)

EDUCATIONAL STATISTICS

Otis, A. S. *Statistical Method in Educational Measurement* (Yonkers, World Book Company, 1925)

Rugg, H. O. *Statistical Methods Applied to Education* (Boston, Houghton Mifflin Company, 1917)

Thurstone, L. L. *Fundamentals of Statistics* (New York, Macmillan Company, 1925)

EXAMINATIONS

Ruch, G. M. *Improvement of the Written Examination* (Chicago, Scott, Foresman and Company, 1924)

Paterson, D. G. *Preparation and Use of New-Type Examinations* (Yonkers, World Book Company, 1925)

EXTRA-CURRICULAR ACTIVITIES

Foster C. R. *Extra-Curricular Activities in the High School* (Richmond, Virginia, Johnson Publishing Company, 1925)

HEALTH EDUCATION

Terman, L. M. *The Hygiene of the School Child* (Boston, Houghton Mifflin Company, 1914)

Hoag, T. and Terman L. M. *Health Work in the Schools* (Boston, Houghton Mifflin Company, 1914)

HISTORY OF EDUCATION

Cubberly, E. P. *History of Education* (Boston, Houghton Mifflin Company, 1920)

Monroe, Paul. *Brief Course in the History of Education* (New York, Macmillan Company, 1907)

Cubberly, E. P. *Public Education in the United States* (New York, Macmillan Company, 1919)

Graves, F. P. *Student's History of Education* (New York, Macmillan Company, 1915)

Parker, S. C. *History of Modern Elementary Education* (Boston, Ginn and Company, 1912)

INDIVIDUAL INSTRUCTION

Washburne, C. W., et al. *"Adapting the Schools to Individual Differences" (Twenty-fourth Yearbook of the National Society for the Study of Education*, Part II, Bloomington, Illinois, Public School Publishing Company, 1925)

Parkhurst, Helen. *Education on the Dalton Plan* (New York, Dutton and Company, 1922)

JUNIOR COLLEGE

Koos, L. V. *The Junior College.* Two vols. (Minneapolis, University of Minnesota, Research Publication Education Series, No. 5, 1924)

Koos, L. V. *The Junior College Movement* (Boston, Ginn and Company, 1925)

JUNIOR HIGH SCHOOL

Davis, C. O. *Junior High School Education* (Yonkers, World Book Company, 1921)

Koos, L. V. *The Junior High School* (New York, Harcourt, Brace Company, 1921)

Briggs, Thomas H. *The Junior High School* (Boston, Houghton Mifflin Company, 1920)

Van Denburg, J. K. *The Junior High School Idea* (New York, Henry Holt Company, 1922)

METHODS OF TEACHING

Stormzand, M. J. *Progressive Methods of Teaching* (Boston, Houghton Mifflin Company, 1924)

Parker, S. C. *Methods of Teaching in the High School* (Boston, Ginn and Company, 1920)

Kilpatrick, W. H. *Foundations of Method* (New York, Macmillan Company, 1925)

Colvin, S. S. *Introduction to High-School Teaching* (New York, Macmillan Company, 1924)

Parker, S. C. *General Methods of Teaching in the Elementary School* (Boston, Ginn and Company, 1919)

PHYSICAL EDUCATION

Williams, J. F. *The Administration and Organization of Physical Education* (New York, Macmillan Company, 1922)

PLATOON SCHOOLS

Spain, Charles L. *The Platoon School* (New York, Macmillan Company, 1924)

Spain, Charles L. *The Platoon School in Detroit* (Detroit, Michigan. Bulletin of Bureau of Standards and Statistics, 1923)

PRINCIPLES OF EDUCATION

Chapman, J. C. and Counts, G. S. *Principles of Education* (Boston, Houghton Mifflin Company, 1924)

Commission on Reorganization of Secondary Education. *Cardinal Principles of Secondary Education* (Washington, D. C., Government Printing Office, Bureau of Education Bulletin No. 35, 1918)

Inglis, Alexander. *Principles of Secondary Education* (Boston, Houghton Mifflin Company, 1918)

RELIGIOUS INSTRUCTION

Stout, J. E. *Organization and Administration of Religious Instruction* (New York, Abingdon Press, 1922)

Betts, G. H. *How to Teach Religion* (New York, Abingdon Press, 1919)

Betts, G. H. *The Curriculum of Religious Education* (New York, Abingdon Press, 1924)

SCHOOL ADMINISTRATION

Cubberly, E. P. *Public School Administration* (Boston, Houghton Mifflin Company, 1916)

Anderson, W. N. *A Manual for School Officers* (New York, Century Company, 1925)

Dutton, S. T. and Snedden D. *The Administration of Public Education in the United States* (New York, Macmillan Company, 1908)

Strayer, G. D., and Thorndike, E. L. *Educational Administration* (New York, Macmillan Company, 1922)

SCHOOL FINANCE

Strayer, G. D., et al. Educational Finance Inquiry Series, (New York, Macmillan Company)

Especially the following:

Vol. IV. Alexander, Carter. *Bibliography of Educational Finance* (1924)

Vol. V. McGaughy, J. R. *Fiscal Administration of City School Systems* (1924)

Vol. VI. Newcomer, Mabel. *Financial Statistics of Public Education in the United States* (1910-1920)

Vol. IX. Morrison, H. C. *The Financing of Public Schools in the State of Illinois*

Pittenger, B. F. *Introduction to Public School Finance* (Boston, Houghton Mifflin Company, 1925)

Swift, F. H. *A Survey of Public-School Finance in the United States* (Washington, D. C., Government Printing Office, Bulletin No. 13, 1924)

SUPERVISED STUDY

Thomas, F. W. *Training for Effective Study* (Boston, Houghton Mifflin Company, 1922)

SUPERVISION

Burton, W. H. *Supervision and the Improvement of Teaching* (New York, D. Appleton Company, 1922)

Nutt, H. W. *Supervision of Instruction* (Boston, Houghton Mifflin Company, 1920)

Cubberly, E P. *The Principal and His School* (Boston, Houghton Mifflin Company, 1923)

Anderson, C. J., Barr, A. S., and Bush, Maybell. *Visiting the Teacher at Work* (New York, D. Appleton Company, 1925)

SURVEYS

Sears, J. B. *The School Survey* (Boston, Houghton Mifflin Company, 1925)

TEACHERS' SALARIES

National Education Association. *Public School Salaries in 1924-25* (Washington, D. C., National Education Association, Research Bulletin, Vol. III, No. 1 and 2, January and March, 1925)

Committee of Ninety. *Salary Adjustment, Schedules of February, 1925, March 11, 1925* (Chicago, Board of Education, 1925)

TEACHER TRAINING

Russell, Charles. *Improvement of the City Elementary School Teachers in Service* (New York, Teachers College, Columbia University, 1922)

Strayer, G. D., and Englehardt, N. L. *The Classroom Teachers at Work in American Schools* (New York, American Book Company, 1920)

VOCATIONAL EDUCATION

Prosser, C. A., and Allen, C. R. *Vocational Education in a Democracy* (New York, Century Company, 1925)

Payne, A. F. *Administration of Vocational Guidance* (New York, McGraw-Hill Book Company, 1924)

Edgerton, A. H., et al. "Vocational Guidance and Vocational Education for the Industries." *Twenty-third Yearbook of the National Society for the Study of Education*, Part II (Bloomington, Illinois, Public School Publishing Company, 1924)

Commission on Reorganization of Secondary Education. *Vocational Guidance in Secondary Education* (Washington, D. C., Government Printing Office, Bulletin No. 19, 1918)

EDUCATIONAL JOURNALS

American School Board Journal (Milwaukee, Wisconsin, Bruce Publishing Company)

Educational Review (Garden City, New York, Doubleday, Page and Company)

Elementary School Journal (Chicago, University of Chicago)

Journal of Educational Psychology (Baltimore, Maryland, Warwick and York)

Journal of Educational Research (Bloomington, Illinois, Public School Publishing Company)

School Review (Chicago, University of Chicago)